

**PREVENTING HIGH SCHOOL DROPOUT: IMPLICATIONS OF A SCREENING  
INVENTORY FOR SCHOOL REFORM POLICY AND PRACTICE**

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Submitted to the Graduate Faculty of  
Education in partial fulfillment  
of the requirements for the degree of  
Ed.D. in School Leadership

University of Pittsburgh

2006

UNIVERSITY OF PITTSBURGH

SCHOOL OF EDUCATION

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# **PREVENTING HIGH SCHOOL DROPOUT: IMPLICATIONS OF A SCREENING INVENTORY FOR SCHOOL REFORM POLICY AND PRACTICE**

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University of Pittsburgh, 2006

School dropout has yet to be effectively measured in terms of the costs to an individual's social and emotional health and the long term social and financial costs to society in general.

Traditional predictors of school dropout have focused largely on unchangeable factors such as socioeconomic status, race and ethnicity, and academic achievement which have resulted in limited impact on reducing school dropout rates.

This data analysis used a sample of 93 school dropouts and 429 non-dropouts from five high schools and three alternative Centres for Individual Studies that serve high school dropouts in central Ontario, Canada to examine the differences in health profiles of dropouts compared to non-dropouts. Psychosocial health was measured using the ADSI-E (Adolescent Development Screening Inventory for Education), an efficient and validated self report inventory that measures nine domains of health: Physical Health; Emotional Health; Behaviour Patterns; Social Competence; Substance Use (individual health outcomes); Family System; School Adjustment; Peer Relationships; Leisure and Recreation (institutional/contextual factors). In addition, the individual and institutional cluster domains were examined to investigate the relationship between these two cluster scores when comparing dropouts to non-dropouts.

One way ANOVA yielded significant differences across all domains with the exception of emotional health ( $p < .054$ ) as well as highly significant differences in the institutional factors and individual health adjustment cluster scores. In addition, Pearson Product Moment correlation analysis resulted in high positive correlation scores between many of the domains.

The results of this study support the hypotheses that there is a significant difference in the health adjustment of school dropouts and non-dropouts and that institutional and contextual factors, and their impact on individual health outcomes, is more salient for dropouts.

Empirical data gathered and reported in this study may inform education reform policy as well as public health initiatives designed to promote school health through effective deployment of resources and the development and implementation targeted intervention programs to reduce the risk of school dropout. These interventions have the potential to reduce the risk of negative health outcomes in youth and the negative life outcomes associated with disengagement and school dropout.

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## **PREFACE**

What an incredible journey!

Ralph, Charlene, Sue, and Bill thank you for all of your support, encouragement, and inspiration. Once again in my life, good people have embraced me, reinforcing my belief in the power each of us holds to make a difference for others through engagement.

What a privilege it is to be educated.

## **1.0 INTRODUCTION**

### **1.1 INTRODUCTION AND RATIONALE**

There is an age old debate within the education profession of whether we educate young people or teach curriculum. Educators who hold the belief that we are responsible for educating the whole child typically adopt a position that views student physical, social, and emotional health as prerequisites for student learning. To effectively educate our young people, many educators and educational leaders have understood the need to address all aspects of child development both in terms of personal health needs as well as age and developmental stage appropriate curriculum. Incorporating that understanding into our values, beliefs, guiding principles, and daily operating norms within the profession, however, is often an enormous challenge and highly subject to the dispositions and value systems held by the educators in a particular school. This dilemma is well captured by Mary Sykes Wylie, senior editor of “Family Therapy Networker”, when she said: “It is as if, in the public mind, a pathetic, battered little child enters a black box and emerges from the other side a strange, terrible creature... a vicious thug who certainly has nothing in common with the poor little tyke who went in.” (Wylie, 1998, pp. 34-35). Along with the growing complexity of society, and conditions in which many of our youth now live, our schools and classrooms are becoming increasingly complex. Educators are faced with the challenge of refining their personal philosophy of education while navigating the pathway to developing characteristics and skills of highly effective educators.

Student achievement has always been a key expressed goal in education and the past decade has witnessed the transformation of that principle into a central measure of school quality. Through the current public accountability framework student achievement has become a central policy campaign issue of many political parties. Historically, academic performance has been a major concern of most countries but recently has reached new heights with greater public

awareness of the education systems through explicit expectations political parties have placed on education for demonstrating public accountability. Student academic achievement has always included measures of student performance relative to curriculum expectations and standards; however the lack of attention directed toward other factors, which are not measured by achievement charts, continues to increase under such an accountability regime. In particular, the academic achievement measures today tend to focus on the standardized test scores in “core” academic subjects of Language, Mathematics, and Science. This focus may result in the devaluation of other disciplines, subjects which engaged students and create meaningful connections in the lives of many students.

Determining which factors may affect a student’s level of academic achievement, or perhaps their potential to succeed in school, is critically important if we hope to minimize the conditions that lead to student disengagement and increased risk of school dropout. In particular, a primary concern for the education system ought to include the priority to understand factors that impact the academic performance of students, particularly during the critical, and the often turbulent, period of adolescence. Gaining a comprehensive understanding of the variables that may affect student academic achievement early in adolescence, may provide information that stimulates insight for policy development that support programs to foster student engagement and promote personal health.

Identifying the difference in health adjustment profiles between school dropouts and non-school dropouts may provide a critical step to understanding some of the root causes of disengagement. While this study is not designed to examine the best predictors of academic achievement, research that examines predictors of school dropout will be explored within both traditional outcomes (academic achievement/grades, standardized tests, course failures, socioeconomic status, race and ethnicity) and non-traditional outcomes (physical, social, and emotional health) to understanding school dropout. Although these traditional factors have contributed significantly to the understanding of the potential for school dropout, their overall predictive value is quite low. Thus, the search continues for additional factors, which may be examined individually or in combination with one another to better understand the pathway to school dropout.

Although previous research has explored a variety of health-related variables in several dimensions of health and their relationship to academic achievement, studies focusing

specifically on the relationship between academic achievement and health adjustment are limited.

The purpose of this research is to explore the physical, social, and emotional health adjustment profiles of school dropouts and non-school dropouts to determine if there is a significant difference. Identifying a significant difference could serve as a first step in preparation to explore more closely the changing health adjustment profiles from early adolescence to the point of school dropout. With dropout rates, in many jurisdictions in Canada and the United States, on the rise over the past decade, one must consider the life long ramifications of school dropout for both the individual young person and society at large. From an educational and developmental perspective the negative health outcomes for youth can be measured within an individual quality of life perspective, including physical and mental health, and from a societal perspective through rates of crime and delinquency.

As the world gravitates toward globalization, there has been no greater time in history for education to become a universal catalyst that transcends culture, race, and social class, as a medium which unites humankind. Perhaps it is possible for us to nurture the value of individual and cultural differences as cause for celebration in the evolution of a global culture.

## **1.2 STATEMENT OF THE PROBLEM**

At all levels of societal leadership, in both the political and educational arenas, we have adopted what one could argue is a lack of commitment to dig deeply into some of the issues that lead to school dropout. Education continues to remain at the forefront of political agendas when it comes to elections to office. More often than not, the essential message to garner public support is focused on ensuring the education system will be “publicly” accountable. These calls for accountability which invariably focus on student achievement, defined by standardized testing measures of achievement, have little regard for the demands of education as a key partner in the healthy development of the child. Senior leaders in education, and political leaders at the provincial or state level, are often aware of the need for comprehensive school health; however, the lack of political will to support initiatives that move beyond physical health promotion to

significantly incorporate mental health support for students at risk may largely explain the limited progress made in this area over the past several decades.

Educators have struggled with the challenge of developing teaching and learning practices that result in improvements in student achievement without neglecting the physical, social, and emotional development of the child. School reform initiatives, and public calls for accountability, have resulted in a number of educational and pedagogical transformations over the past decade, not the least of which could include mismanagement of educational reform by the education system. Perhaps these outcomes are not surprising if we consider that the subject and processes of being publicly accountable are somewhat foreign to our educational systems and educational personnel at all levels.

There are many reasons that contribute to poor public perception about our education systems. While caution should be taken to avoid oversimplification of such a complex problem, there are several issues that have become part of our operating norms and organizational structures in education that may be contributing factors. The first is the gradual erosion of commitment to quality teaching and learning often rationalized by educators through blaming government demands for accountability that result in pressure to “teach to the test”. Secondly, there exists a belief that our ability to facilitate improvement in student achievement is largely dependant on “who” we get as students in our classrooms. Finally, there may be a lack of systematic pre-service and in-service teacher training that prepares educators to be highly effective in developing engaging integrated learning opportunities as well as the processes and conditions that meet the developmental social and emotional needs of children and adolescents. In particular, teacher preparation includes limited exposure to at-risk youth and the processes required to create conditions that foster inclusion, healthy adjustment, and engagement in regular school programs.

Although political leaders are often reminded of the high economic and social costs of school dropout, associated crime and delinquency, subsequent incarceration, public policies and regulations have failed to produce outcomes in proactive targeted funding to help ameliorate many of these preventable problematic outcomes. Perhaps one of the most troubling conditions for the educational community is the lack of public support to address the needs of all students, particularly students at risk of school dropout.

In the process of becoming publicly accountable for raising student achievement, efforts of school reform, and educational practices that narrowly focus on measures of student achievement on standardized tests, may result in pedagogical decisions that eliminate school pathways for many students to become gainfully employed, responsible community minded citizens. Achievement standards are elevated, in some cases to unrealistic levels, and courses often referred to as “non-essential” are eliminated. The outcomes of such changes have a direct impact on the school pathways that lead to students’ post-secondary opportunities. The elimination of non-essential courses effectively forces non-college or university bound students to navigate a course pathway that does not prepare them for apprenticeships, trades training, or direct entry into the workforce. In addition, the requirement of these displaced students to sustain themselves in school conditions that have little relevance and meaning for them may often lead to disengagement, a phenomenon sometimes referred to as “pushing students out” of the education system. The results of student disengagement are clear, regardless of what education system we consider, they frequently lose the battle of self-sustenance and ultimately drop out of school. In this light we may consider school dropout to be a culminating activity, or outcome behaviour that results from years of unaddressed needs and growing problems. If so, then one ought to ask the question: If we understood the underlying problems and mechanisms of student disengagement, would the outcome be preventable? The life long outcomes for disenfranchised youth are often devastating to both themselves and the public.

This study posits that the limited success to date, in significantly reducing the rate of school dropout, is largely due to measures and research that have not accurately identified and characterized the complex interactions of variables as well as the heterogeneous health outcomes for individuals. Identification and understanding of these constructivist processes, combined with targeted and timely interventions, may inform strategies to maintain student engagement and ameliorate conditions that increase risk for troubled youth.

### **1.3 RESEARCH QUESTIONS**

1. Is there a difference in the overall health adjustment scores of school dropouts compared to non-dropouts?

2. Is there a difference in each of the domain specific health adjustment scores of school dropouts compared to non-dropouts?
3. Is there a relationship between the composite scores of individual and institutional factors of school dropouts and non-dropouts and are the manifest differences more salient between dropouts or non-dropouts on individual characteristics or institutional context?

## **1.4 RESEARCH HYPOTHESIS**

The following hypotheses were constructed to align with the aims of this research.

Hypothesis 1: The overall health adjustment scores of school dropouts will be significantly greater than non-dropouts.

Hypothesis 2: There will be significantly greater health adjustment scores for school dropouts in one or more of the nine domains of health: Physical Health, Emotional Health, Social Competence, Behaviour Patterns, Substance Use (Individual Factors), Peer Relationships, Family System, School Adjustment, Leisure and Recreation (Institutional Factors) of school dropouts compared to non-dropouts.

Hypothesis 3: There will be a significant difference between the composite scores of individual factors and institutional factors for both dropouts and non-dropouts and the manifest differences will be more salient for dropouts.

## **1.5 EDUCATIONAL SIGNIFICANCE**

Despite an enormous amount of research that establishes a link between child health and performance in school it continues to be a challenge for school leaders, administrative staff, and teachers to reach consensus on the relationship between student health and academic achievement. More specifically there is an ongoing debate among politicians, educators, and community members with respect to system role and responsibility in promoting student health. Many professional educators remain unconvinced that improving student health is a means to providing the foundation upon which to build academic achievement. Despite what beliefs educators hold in this debate we are still faced with the reality that our attempts to improve



student achievement, based on accountability that focuses on student achievement as outcome measures, have had limited impact on raising the academic achievement of students at risk for dropout. The educational community has responded with numerous “band-aid” solutions such as credit recovery programs, remedial courses, alternative programs, adult education, cyber schools and e-learning. It is not the intent here to challenge the merit and value of these programs, but rather to highlight the reactive nature of these programs and relative similarity of their design to the traditional programs from which the students disengaged from in the first place. The genesis of these programs is rooted in our inability to systematically, effectively, efficiently, and accurately identify the fundamental needs of students who ultimately require these support programs to help them navigate their pathway to high school graduation. Failure to proactively and systematically identify these student needs at an early stage has both a monetary cost to the education system, the public at large, and most importantly the quality of life premium to be paid by young people who needed our support. The lack of political policy to reassess what the education system ought to do for student’s in the twenty first century has continued to be an obstacle to breaking down the silo design of government ministries and departments that have compartmentalized responsibilities for promoting healthy families and communities.

The early identification of health related risk provides a critical and timely opportunity to initiate targeted interventions that could help build resilience in students to help sustain them and motivate them through the discovery of meaning in their educational pursuit. Early intervention could help minimize the possibility of disengagement and associated negative outcomes. By exploring the health profiles of school dropouts compared to non-school dropouts, it was the intent of this research to gain not only a better understanding of the profiles, but more importantly, to determine specifically which health domains were most important as indicators for developing early prevention and intervention programs for students at risk. Targeting health education programming, as well as developing age and stage appropriate health promotion programs, may be a cost effective means of reducing the chances of school dropout due to poor health adjustment. Future research may then determine the effectiveness of health enhancing programs that target specific adolescent health needs. Additionally, future research may examine the predictive validity of student health profiles measured by the nine domains of health in the ADSI-E.

To date there is no efficient psychometrically sound self-report screening instrument capable of providing a comprehensive, multiple domains, profile of health adjustment for adolescents. By utilizing the *Adolescent Development Screening Inventory for Education* (ADSI-E)<sup>1</sup> to quantify adjustment in nine domains of health on an annual basis it is possible to efficiently screen and monitor changes occurring throughout adolescence. This information can then be used to construct targeted interventions for students identified “at-risk”. Results can also be used in aggregate to design age appropriate targeted prevention programs for a school, district, or region. The ADSI-E is a self-report web-based on-line inventory that takes 20 minutes to complete. The school provides an opportune location for large scale screening of student health adjustment (Tarter, Kirisci, & Mezzich, 1996). This approach would enable a school or district to determine the prevalence of specific health adjustment concerns and to utilize that information to guide prevention programming needs. It may also be used to inform the deployment of social work or psychological services resources within a school district or used in partnership with public health for guiding Health Promoting School initiatives.

## **1.6 THEORETICAL AND CONCEPTUAL FRAMEWORKS**

A number of theories have been developed in an effort to understand the phenomenon of school dropout (Finn, 1989; Wehlage & et al., 1989). These theories have been derived from several social science disciplines such as psychology, sociology, anthropology, and economics each of which provide unique perspectives on factors related to school dropout (Allen-Meares, 2004).

Limitations in generalizations about school dropout often emerge when studies approach school dropout from a single-dimension conceptualization (e.g., dropout prediction based on SES, race and ethnicity, academic achievement). While these factors can be shown to have statistically significant relationships to school dropout, they provide little acknowledgement for, or insight into, the complex relationships and unique adaptations between individual health constructs and contextual factors (McNeal, 1995).

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<sup>1</sup> The ADSI-E is an adaptation of the *Drug Use Screening Inventory Revised* (DUSI-R) with minor variations to maintain psychometric properties. See references for more information (Tarter & Kirisci, 1997).

This study is positioned within the Biopsychosocial and Social Ecological Health frameworks. The Biopsychosocial framework includes a holistic view of the developing person by considering individual biological factors (e.g., genetic makeup, physical health status, environmental toxins), individual psychological health factors (e.g., cognitive abilities, attitudes and emotions, social cognitions), and social/environmental influences (e.g., neighborhood dynamics, school, peers, cultural factors).

The Social Ecological Model is best defined by Bronfenbrenner (1979) as a nested arrangement of multiple persons and systems in which human development occurs. Bronfenbrenner breaks down the “ecological environment” into the *microsystem*, the *mesosystem*, the *exosystem*, and the *macrosystem*. The microsystem describes the complex relations between the developing person and the immediate settings that contain the person (e.g., family, school, peer group). The mesosystem describes the interrelations among these settings (e.g., home-school relations). The exosystem considers other social structures (e.g., parents’ workplace, social networks, immigration policies) that affect the developing person and settings in which the person is found but do not themselves contain the developing person. The macrosystem refers to the general cultural or subcultural norms for responding to the environment. In addition, the Biopsychosocial and Social Ecological frameworks are positioned within Constructivist philosophy which acknowledges the complex processes involved in the construction of reality and meaning for individuals and groups within each of the micro, meso, exo, and macro systems defined by Bronfenbrenner.

The primary focus of this research was to examine the relationship between the health adjustment profiles for school dropouts and non-school dropouts. Nine domains of health are measured, each of which have been categorized into an individual perspective conceptual framework or an institutional perspective contextual framework (Allen-Meares, 2004). Individual factor health domains include health constructs related to the individuals attributes – such as values, attitudes, and behaviors. Individual factors include Physical Health, Emotional Health, Social Competence, Behaviour Patterns, and Substance Use. Institutional factor health domains include institutional setting and contextual factors that help shape individual attitudes and opportunities – such as family, peers, community, and school. Institutional Factor health domains include Peer Relationships, Family System, School Adjustment, and Leisure and Recreation.

Although the intent of this study does not include an in-depth inter-relational analysis of individual health constructs and institutional contextual factors, such an analysis could help reveal some of the relationships between these two clusters of health domains. Such an in-depth analysis could elucidate relationships and implications for developing targeted preventions and interventions for promoting individual assets and environmental protective factors to develop resilience in youth and reduce the risk of negative health outcomes associated with student disengagement. These results will be discussed.

## **2.0 LITERATURE REVIEW**

### **2.1 BACKGROUND**

Throughout years of educational research on school dropout, identifying the determinants of dropout continues to be an important pursuit. Addressing the issue of school dropout has become an increasing concern of the education profession, and more recently of governments, although skepticism may be warranted that such an elevated level of concern has not been matched by positive results in effectively reduce the rate of school dropout. A historical review of the literature reveals varying perspectives on the role of education in general, the specific factors and conditions that lead to school dropout, the effectiveness of previous efforts to reduce school dropout, and the role of government and policy in the equation of effectively reducing school dropout rates.

Global perspectives and practices vary in commitment to maintaining health services within their respective education systems. Jimerson et al (2006) utilized the International School Psychology Survey (ISPS) to provide an insightful view into the similarities, difference, and diversity among school psychologists in Australia, China, Germany, Italy, and Russia (previous data was collected on Albania, Cyprus, Estonia, Greece, and Northern England by Jimerson et al (2004)) . Although the commitment of resources (both personnel and financial), service design, and practices associated with the operationalization of school psychological services varies, there are minor variations in what countries deem to be central or common goals for such services. School psychologists from around the globe consistently report wanting to help produce change, work with people, a common dislike for administrative work, and lack of money to properly fund services (Jimerson et al., 2006). Jimerson also notes common themes of ability to apply knowledge, working with students and families, and variety of work as the most liked aspects of school psychology. Conversely, the least liked aspects include overwhelming workload or

caseload, unrealistic high expectations of administration and teachers, acting as a gatekeeper for special education, and lack of acceptance and understanding of the role of the school psychologist by staff. The existence of school psychological services across the globe highlights the universal importance placed on school psychological services, however, the role of such services is rarely aligned with the types of mental health services associated with proactive prevention, or intervention, program development and implementation that would support positive health outcomes for all students within the school systems. The lack of systemic, coordinated, and sustainable school based health promotion services is an indicator that these services do not warrant the political attention required for them to become integral to the operation of health promoting schools.

Government lack of support for systemic development of comprehensive school health through integration of health services into the education system is perhaps best positioned within the history of how policies are reflective of the way in which the issue of school dropouts is defined (Levin, 1992). Many countries are now paying particular attention to the issue of school dropout through a wide range of initiatives and school reform efforts. Levin (1992) points out that in Canada the discussion associates the issue of dropout with “economic competitiveness” where measures to prevent dropout are driven by a social and economic agenda and have largely focused on providing alternative programs and supports that typically replicate existing school structures and processes. Levin contends that approaches to at-risk youth result from a position on dropouts that views the issue as a problem of and for the students. This perspective highlights how powerful political directions are barriers to systemic change. Combined with a long history of educational philosophy focused on sustaining a system that “teaches” curriculum designed for students who are university bound, it is not surprising that many countries continue to struggle with changes in what education ought to be and how it may best be delivered. The frustrations, and subsequent lack of motivation, of students for whom such a system does not serve rarely enters the discussion and the outcome is arguably a perpetual reactionary system that develops misdirected strategies based on misguided values for education and the lack of value it brings to many adolescents by attempting “any means possible to remediate students’ academic deficiencies” (Newfoundland, 1989, p. 12).

The lack of proactive policies and allocation of financial resources to reduce the incidence of at-risk youth results in more than social costs to school dropouts. There are

monetary costs associated with school dropout as well. Cohen (1998) provides two lifetime estimates of saving a high school dropout, based on 1997 U.S. dollars. The first is a lifetime cost to the individual and the second is the estimated costs to society that result from anti-social behavior/criminal activity, and drug abuse. Cohen breaks down the direct costs to high school dropouts into lost wage productivity (\$300,000), fringe benefits (\$75,000), and non-market private and public losses (improvements in technology, medicine, other forms of knowledge, benefits to society resulting from social cohesion: \$95,000-\$375,000), representing a total potential lifetime cost of \$750,000. The estimated costs to society for anti-social behavior/criminal activity (\$1.5 – \$1.8 million), and heavy drug use (\$483,000 - \$1,260,000) for a total potential lifetime cost of \$14.4 million. Although Cohen acknowledges the lack of conclusive evidence for demonstrating intervention program effectiveness he does highlight the dilemma in choosing to invest \$1,000,000 to prevent four youth from becoming career criminals or accept the potential monetary cost to society of \$5,040,000. There is evidence to suggest, however, that such long term negative outcomes for individual school dropouts, as well as society in general may have been predictable outcomes regardless of whether the person drops out of school if dropout is considered a symptom as much as a cause. Cairns et al (1989) demonstrated through cluster analysis of variables (persons who had similar behavioral and cognitive profiles) that while there is a greater rate of dropout (80% for males, 47% for females who fit the statistical cluster of high levels of aggressive behavior and low levels of academic achievement) the negative individual and community outcomes attributed to being a school dropout requires further investigation into the comparison of long term outcomes for dropouts and non-dropouts who's cluster profiles are similar.

Education systems continue to respond to the issue of school dropout with a multitude of programs, such as storefront schools, e-learning and Cyber Schools, alternative classrooms and programs, all of which are at best marginal variations on what schools typically do. In a study of dropout prevention programs in Ontario, King et al (1988) concluded that there was little change in the content of courses and programs that were offered. Educational systems have invested substantive amounts of consumable and human resources in the development of programs designed to serve students at-risk of school dropout with very little positive evidence of change in dropout rates (Mann, 1986). The recent spread of school reform initiatives generally include a sustained interest in addressing the issue of disengaged, or at-risk students, however, as Levin

(1992) points out, the chances of affecting real change remain limited as strategies continue to build on simplistic and often inaccurate concepts of the pathway to school dropout (Levin, 1992).

Current research has largely examined predictors of school dropout within socioeconomic status, race and ethnicity, and academic factors such as achievement level and credit failure rates. Research that examines health adjustment variables relative to student disengagement and school dropout are limited in number. The clustering of health domains into individual factors and institutional factors is extremely limited and usually targets at best a few of these domains as measures of health adjustment. Where it exists, there is little understanding of the evidence to help inform the influences of contextual factors on individual health constructs. Perhaps the most important factor behind the purpose for selecting the ADSI-E instrument for health measures resides in the ability to affect positive change in any of the health domains. Understanding student disengagement and school dropout within a comprehensive Ecological Health Model, rather than correlations between school dropout with traditional or unchangeable factors such as socioeconomic status and race and ethnicity, may provide significant insight into the development of effective prevention and intervention programs that can positively influence health outcomes for youth.

The purpose of this research was to compare the health adjustment profiles between school dropouts and non-dropouts in nine domains of health: Physical Health, Emotional Health, Social Competence, Behaviour Patterns, Substance Use (Individual Factors), Peer Relationships, Family System, School Adjustment, Leisure and Recreation (Institutional Factors). Research on school dropouts is of particular significance during this era of globalization where the demands for education as a basis for independence, economic viability, and responsible citizenry are essential for minimizing long-term negative health outcomes and ultimate financial and social burden on society.

## **2.2 TRADITIONAL DETERMINANTS OF SCHOOL DROPOUT**

For many years, researchers and educators have been most concerned with the question of which factors are the most accurate determinants of school dropout. Longitudinal and cross-sectional studies have demonstrated that family background, school experience, antisocial behavior, and



personality traits are good predictors of dropout (Janosz, Le Blanc, Boulerice, & Tremblay, 1997). Historically, the factors most commonly utilized as measures associated with the individual are socioeconomic status, poverty, race and ethnicity, and gender as variables while contextual factors have typically included schools, families, and community characteristics. Traditional research methodology has included examinations of multiple variables within a number of contexts and there is a wide range of interpretations when it comes to the classification of variables into “individual” factors and “institutional” factors. Most research on school dropouts has approached the topic from an individual perspective where the attempt has been to determine the factors that lead to school dropout. These individual factor perspectives typically include broad categories of demographics (gender, race & ethnicity), family background (socioeconomic status, education level of parents, parenting style), peers and community (peer relationships, community characteristic), and school experiences (poor performance/early school failure, poor attendance, negative attitude) (Bryk & Thum, 1989; Ekstrom, Goertz, Pollack, & Rock, 1986). Attempts to examine more closely the complex relationships between the conditions in which the individual exists and their individual health outcomes, however, requires a classification system conducive to examining both individual variables as well as clusters of variables. The classification system and rationale for this study will be discussed in section 2.3.

There is some evidence, however, of early developments in school dropout research that attempted to look beyond the broad contextual factors of socioeconomic status, race and ethnicity, and student achievement, as explanations for school dropout. Cairns et al (1989) identify the limitations of defining school dropout by educational and legal criteria, which results in broad categorization strategies, when analysis of the conditions that may lead to dropout should include interpersonal and cognitive factors in child development that may be important mediators. The notion of coalesced factors, such as behavioral problems and achievement problems, are explored by Cairns et al and their study findings which support this notion will be discussed in a subsequent section exploring non-traditional determinants of school dropout.

Another common approach to research on school dropouts examines the school as an institution in which culture and climate factors are correlated with dropout rates. Factors such as student composition (type of student/socioeconomic background, motivation), school characteristics (public vs private, resources), and school organization (rules, practices, discipline,

academic rigor) have been shown to have an impact on school achievement (Lee & Smith, 1993). In addition to these culture and climate factors are the tractable patterns and trends in student achievement in specific courses which will be discussed in section 2.2.3.

The challenge still remains, however, to answer fundamental questions regarding the relationships between individual health outcomes and the nature and power of contextual influences. Is there a relationship among these variables that can help us map pathways to school dropout? If so, the magnitude and sequence of variable influence may help guide the development of prevention initiatives aimed at modifying institutional conditions to enhance protective factors, reduce risk factors, and promote resilience and positive health outcomes for youth. Understanding these complex relationships may also help untangle the relationships that exist between disorganized families, schools, and communities and associated negative health outcomes and may ultimately lead to the ability to construct systemic and sustainable conditions that effectively develop organized families, schools, and communities that foster positive health outcomes for youth.

### **2.2.1 Socioeconomic Status**

The base of research that examines the relationship between socioeconomic status and school dropout is extensive. Explanations of the relationships between socioeconomic status and school engagement, school failure, dropout rates, and academic achievement provide important insights into such relationships. These explanations, however, may be primarily descriptive in nature and provide little insight into the complexity of how they interact to create conditions that ultimately influence the health outcomes of individuals who are affected by such factors. For example, some studies claim that socioeconomic status is a strong predictor of school dropout. While the statistical analysis of these studies clearly demonstrate a strong relationship between these two variables, the assumption that socioeconomic status is a predictor of school dropout neglects the fact that many students who dropout of school do not come from low socioeconomic conditions. While research has shown that dropout is highly correlated with SES, Astone and McLanahan (1991) have shown that school dropouts are more likely to come from low SES families with structural disadvantages (e.g., single-parent, low level of education, large family, other dropouts in the family). This differentiation of dropout rates, when structural disadvantages are factored

into the equation, begins to demonstrate the complexity of contextual factors and their interaction and influence on the individuals who live in such conditions.

Social Capital is another construct which attempts to examine more closely some of the conditions and interactions that occur within the broader context of low SES. Social Capital is defined by Coleman (1988) as representing the resources that reside in function-specific social relationships in which individuals are living, and views Social Capital as setting the context within which the parents' financial (parental income) and human resources (education of parents) impact their children. This desegregation of Social Capital creates a framework which acknowledges the importance and complexity of family dynamics within low SES contexts and may partly explain why many children from low SES families have positive health outcomes and academic achievement.

This framework was utilized by Teachman et al (1997) who took a large sample of data from the *National Educational Longitudinal Survey* to test whether social capital mediates the effect of parental financial and human capital on leaving school. Teachman categorizes Social Capital into general measures (attending Catholic school, family structure) and more specific measures (parent-child and parent-school interactions) to investigate how social capital interacts with financial and human capital of parents to determine school continuation. Utilizing logistic regression models for predicting dropout Teachman et al found that most measures of social capital are related to the odds of dropping out of school highlighting how social capital sets the context within which human and financial capital of parents may be converted into success in school by their children. These findings are consistent with Coleman's (1988) argument that although financial and human capital of parents are necessary for the development of human capital in their children they alone are not sufficient. The creation of well adjusted children requires that financial and human capital be accompanied by social relationships that allow resources to be transferred and utilized by their children.

Janosz et al (2000) acknowledge that dropouts come from all types of socioeconomic and cultural backgrounds and that risk factors can be found in personal, interpersonal, and contextual factors such as poverty, community, and school characteristics although minority students from low SES families appear to be most at risk (Rumberger, 1987; Wehlage & et al., 1989). Combined with the findings of Teachman et al (1997) and Coleman (1988) further investigation to more fully understand the complicated processes and dynamics of contextual influences on

personal development and positive health outcomes may be prerequisite to deep understanding of the pathway to school disengagement and dropout.

### **2.2.2 Race and Ethnicity**

In addition to socioeconomic status, school dropout rates are often examined within the context of race and ethnicity. Multiple studies demonstrate a statistically significant relationship between racial groups and school success, school failure, dropout rates, and academic achievement. While these studies may be important for identifying large groups and cultural communities that experience high dropout rates the insight they provide into the specific conditions that increase or decrease chances for youth disengagement and school dropout are somewhat limited and may be culturally insensitive.

There are several theories developed through ethnographic research and social construction models that provide explanations about low school performance and high dropout rates among different racial and ethnic groups. The Oppositional Culture Model is one such theory and has been widely accepted by academics as a theoretical framework to help explain racial disparities in school performance and dropout rates (Ogbu, 1991). Sometimes referred to as the Resistance Model, this theory establishes the following classifications: *Involuntary Minorities* (groups historically enslaved, conquered, or colonized, such as African American), *Immigrant Minorities* (groups who migrated to the host country of their own free will such as Asian Americans), and *Dominant Group* (white people, in the case of the United States) where outcomes and opportunities for each group are classified into four Hypothesis. *Hypothesis 1*: Students from Involuntary minority families perceive fewer returns to education and have fewer occupational opportunities than do students from the dominant and voluntary minority groups; *Hypothesis 2*: Involuntary minority students exhibit greater resistance to school than do dominant and voluntary minority groups; *Hypothesis 3*: High achieving involuntary minority students experience negative sanctions from their peers; *Hypothesis 4*: Resistance to school accounts for the racial gap in school performance between involuntary minority students and dominant or voluntary minority students. Ainsworth-Darnell and Downey (1998) however, conducted a rigorous test of the Oppositional Culture explanation and conclude that its key predictions fail. Using data from the National Education Longitudinal Study they examined racial differences in

performance that are independent of socioeconomic factors by controlling for variables that would establish significant differences in involuntary minority, voluntary minority, and dominant group socioeconomic profiles of school dropouts. They identified the most fundamental flaw in the oppositional culture explanation is that African American students did not perceive fewer returns and more limited occupational opportunities than do whites when socioeconomic factors were controlled. They found that African Americans reported more pro-school attitudes for almost all attitudinal measures, measures which were also found to be meaningful predictors of school success.

Recent research on ethnicity and ethnic minorities is beginning to show some of the inconsistencies in prior research. Other examples include studies that indicate African Americans and Hispanic Americans are more likely to drop out of school (Ensminger & Slusarcick, 1992). Yet studies by Rumberger (1983) and Cairns et al (1989) found no more likelihood of school dropout for ethnic minorities when socioeconomic variables are controlled. In addition, Teachman et al (1997) found that continuation in school is influenced by the interaction of social capital with financial and human capital of parents. The results of their study demonstrate the odds of dropping out of school are increased by about 96% for children from stepparent families, 69% families of never-married women, and 200% increase for father-only families. The odds of school dropout are shown to decrease by about 57% for children who attend a Catholic school, 26% for youth who know other parents, and perhaps most importantly parent-child connectivity was shown to reduce chances of dropout by 29% for each additional increment on a scale of parent-child interaction (five component measures of direct parent involvement through communication with their child about school related activities).

Another examination of racial differences in school performance is the investigation of cognitive variables as predictors of school performance. Farkas et al (1990) build on the Cultural Resource Theory which posits that student skills, habits, and styles which figure in student/teacher interactions are met with differential rewards by teachers. They classify cultural resources into cognitive (e.g., course work mastery, course grades) and non-cognitive (days absent, work habits, disruptiveness, appearance and dress) performance variables and demonstrate that differentiation in course grades can be accounted for by these variables. The most notable impact on course grades can be found in the effects of student work habits, confirming that teacher judgments about a student's non-cognitive characteristics are powerful

determinants of achievement. This approach highlights the potential for misalignment of teacher expectations with cultural norms and attitudes about the real value of education for students raised in working class families. Kohn (1977) notes that working class families, largely comprised of racial minorities, tend to raise their children with non-cognitive characteristics such as more frequent absence from school, less commitment to learning, and more disruptive behaviors all of which are associated with negative outcomes in school. He contends that these characteristics are often what prevent them from excelling in school and potentially moving on to middle-class occupations. Combined with students' perceptions of occupational opportunities, it seems logical that valuing of education and the motivational level to succeed in school can be significantly influenced by cultural factors (Ogbu, 1991). If socialization processes do not instill value for education, or the person has no reason to connect education to economic gain, low motivation seems a predictable outcome. In this light, the generalization of school success and motivation in school, based on racial group status, neglects to consider the large numbers of youth who do succeed in school.

Overall generalizations about the relationship between race and ethnicity and school dropout may provide explanations that are over simplifications to the complex process of social construction in neighborhoods characterized by its racial composition. Further exploration into the complex process of social construction may help us develop a deeper understanding of the family and community dynamics. Greater understanding could lead to the development of culturally sensitive interventions that reduce risk and promote protective factors for positive health outcomes in youth.

### **2.2.3 Academic Achievement**

Educators have a long history of acknowledging student personal characteristics (both cognitive and non-cognitive) as well as contextual factors (family functioning, community composition, etc.) as contributing factors to student achievement. There may, however, be a tendency to over simplify explanations and predictors of student disengagement and risk of dropout.

Research has contributed to this phenomenon as well. Some studies have examined school related factors, such as attendance, course selection, course grades, and credit accumulation, and their correlation to school dropout. Correlations, such as the relationship

between school dropout and course selection in high school, provides a relationship that is largely descriptive and yields little insight into the complex mechanisms and experiences that influence the decision to choose or not choose courses considered to be more academically rigorous. Multiple studies have shown that school dropouts tend to have a history of poor grades, grade retention, low motivation, truancy, and poor relationships with teachers (Cairns, Cairns, & Neckerman, 1989; Ekstrom, Goertz, Pollack, & Rock, 1986; Fagan & Pabon, 1990; Rumberger, 1983). Such approaches are consistent with the reactive strategies, and replication of current practices, often employed in education when attempting to design alternative programs for students already presenting themselves at risk or leaving school.

These studies are perhaps most problematic in terms of their ability to define pathways to school dropout since, poor attendance, low course grades, and course failure are variables that fall within the domain or pathway to school dropout. In other words, poor attendance typically leads to low grades, low grades may result in course failure, and cumulative course failures prevent completion of high school which may be classified as a form of dropout. Multiple studies have shown the relationship between school attendance and academic achievement, however the mechanisms which promote poor school attendance, and subsequent low achievement, remain unexplained. Understanding the conditions that lead to disengagement from school, poor attendance, and low academic achievement become important if we hope to intervene with programs to reduce these risks.

### **2.3 NON-TRADITIONAL DETERMINANTS OF SCHOOL DROPOUT**

Non-traditional determinants of school dropout include factors that look beyond general variables such as socioeconomic status, race and ethnicity, and school factors associated with academic achievement. One of the key issues for investigation in the pursuit of understanding school dropout is the examination of the similarities and differences in the reasons why high and low achievers drop out of school.

Acknowledgement of the complex phenomenon of school dropout and its causes can be found as early as the 1950's when Tesseneer and Tesseneer (1958) posited that the influence of

specific variables on different students affects them in different ways and affect the same student in different ways at different times. Data from decades of research on school dropouts clearly indicate that students who drop out of school can be characterized by a wide range of personal and social characteristics (Cairns, Cairns, & Neckerman, 1989; Fagan & Pabon, 1990; Rumberger, 1987; Wehlage & et al., 1989). As Janosz et al (2000) point out it is clear from the empirical research that not all dropouts are alike. There are still many gaps in the current research on high school dropouts (Garnier, Stein, & Jacobs, 1997; Vallerand, Fortier, & Guay, 1997). In addition to gaps in current research, few investigations have attempted deep exploration into some of the unique predictors of school dropout (Battin-Pearson et al., 2000). To advance our understanding of the factors contributing to school dropout, and to honor the unique individual adjustments and adaptations to such contributing factors, a comprehensive measure of health adjustment may provide a means for quantifying each student's unique health configuration.

In the past, non-traditional predictors have been clustered into broad categories of personal characteristics consisting of personality, demographic, and/or environmental factors. For the purposes of this research, and to help clarify the organization of variables within “individual” factor health constructs or “institutional” factor contextual influences, the organization and classification rationale is as follows. Individual factors are defined as health constructs that are deemed to be internal, and related, to the individual's physical and psychosocial health state or outcomes. Institutional factors are considered to be contextual variables that are external conditions associated with the generation of risk or protective factors and are characterized by complex interactions and influences on individual health constructs. An illustration of these relationships can be found in Figure 1.

Although both traditional and non-traditional constructs have contributed to the understanding of school dropout, each elucidates only a portion of the prediction equation, none of which have progressed toward reliable early screening of potential dropouts. It is possible that there are other constructs and processes, yet to be identified, which may help in early identification of students at risk and better predict chances of school dropout (Tarter & Kirisci, 1997).

The Biopsychosocial framework, Ecological Health framework, and constructivist philosophy, are utilized as a means of recognizing the holistic nature of human development



while remaining sensitive to the uniqueness of cultural norms and influence in the construction of meaning. These frameworks have influenced this research design by stimulating consideration for understanding the individual physical and psychosocial health adjustments of school dropouts and non-dropouts, as a starting point for future investigation to examine more closely the relationships among variables. In pursuit of deeper understanding of some of the conditions that influence the pathway to school dropout, recent research has begun to concentrate on nontraditional factors and explanations. This study was designed to join that pursuit.

### **2.3.1 Health Adjustment Outcomes**

There is a substantial degree of inconsistency within the literature with regard to what variables are categorized into individual or institutional factors. Although empirical research on school dropouts often suggests that some risk factors are common (low school achievement, SES, etc.) it is highly unlikely that all school dropouts have the same personal attributes, or the same family, school, and social experiences (Kronick & Hargis, 1990; Rumberger, 1987; Wehlage & et al., 1989). Research has also demonstrated the heterogeneity of dropouts which makes it difficult to identify homogeneous underlying risk factors as characteristic of dropouts (Janosz, Le Blanc, Boulerice, & Tremblay, 2000). The challenge of future research may be to move toward discovery of the unique configuration of individual and institutional factors, the dynamic and constantly changing conditions of such factors, and the transformational influences they may have on an individual during key stages of growth and development. The interrelationships that exist may lead to school disengagement for one student and not for another. Understanding the unique health profiles, both current and on-going, may help establish an efficient and effective means for determining a student's current level of risk as well as a comprehensive profile that can inform the development of targeted interventions for reducing the risk of disengagement. Understanding unique individual health profiles, in combination with empirical knowledge about the ecological framework in which the individual lives, could provide profound insight into the need for interventions that create asset building families, schools, and communities to build resilience in youth, while at the same time creating conditions that reduce risks.

This study determined the categorization of nine health adjustment domains by considering each domain in reference to external (institutional) contextual factors that may exert

positive or negative influence on the individual relative to internal (individual) health constructs. External factors were deemed to be factors where environmental conditions, opportunities, and interpersonal dynamics may present positive or negative influence on the individual. These contextual or institutional factor domains include School Adjustment, Family System, Peer Relationships, and Leisure and Recreation. Internal factors were considered to be physical, social, and emotional characteristics, personal attributes, as well as internalization and externalization of thoughts, feelings, and behaviors. The individual factor domains include Social Competence, Behavior Patterns, Emotional Health, Physical Health, and Substance Use. An examination of literature on each of the domains follows; however, it will become apparent that there is significant overlap in discussion since they are inextricably connected in the construction of real life experiences and outcomes for youth.

## **2.4 INSTITUTIONAL FACTORS**

### **2.4.1 School Adjustment**

Recent research on school dropout has begun to include further investigation into school related conditions that exert influences on students. The phenomenon under exploration is sometimes referred to as “school push out”. There should be caution taken, however, that generalization of research outcomes that direct primary blame on schools for student disengagement may be oversimplifications of a complex problem. While variable measures may be drawn from a wide range of school factors, common ground in prior research on school adjustment can be found in their ability to elucidate the effects of school climate, school organizational structure, student demographics, and instructional practice on student engagement. It would be prudent of researchers, who state claims of “causal” relationships between disengaging school conditions and student disengagement from school, to ensure their findings clearly demonstrate the complex relationships between multiple variables as well as the unique configuration of outcomes that result from individual differences.

The process of school engagement can be traced back to its origins of early school experiences. Children’s early school performance and adaptations become patterns that remain

relatively stable as they move through the education system (Ensminger & Slusarcick, 1992). Teacher rewards become reinforcing and these in turn serve to promote commitment to school, which may in turn improve chances for academic success. The counterpart to this positive reinforcement cycle is one in which students who are not performing well become more alienated, disheartened, and already poor performance becomes worse (Ensminger & Slusarcick, 1992). These examples of positive and negative feedback loops are widely understood and accepted among most educators.

Challenges to understanding for educators, however, are often introduced when a closer examination of the complex interactions of students' personal characteristics (such as temperament, personal attributes, and personal assets) and the influence of contextual factors (school climate, school organizational structure, and instructional design) on these characteristics is required. While it is relatively easy to determine if program design and curriculum content aligns with real (rather than perceived or wishful) postsecondary opportunities of direct employment, trades or apprenticeship training, college, or university, less clear is the relationship between instructional design to student learning needs and styles. It is possible to speculate, however, that if a high school has designed its primary program pathway (including course alignment and instructional strategies conducive to such a pathway) to cater to students who are college or university bound, then the likelihood of programs and instructional practices that meet the needs of non-college or university bound students (often the majority) is, by default, unlikely. For many education systems the sustenance of this phenomenon adds another perspective to the concept of "minority" status, and perhaps introduces the concept of "privilege" to the educational equation of resistance to change.

An interesting finding by Ensminger and Slusarcick (1992) is that feedback loops of early school engagement or disengagement discussed previously, are not so clear for children from poor families. This discovery may partly be explained by disenchantment with and alienation from school, a theory which is supported by Levin's (1992) contention that misalignment of school programs, to educational needs and postsecondary aspirations of students from low SES families, may result in a logical outcome of disengagement for such students who find little meaning and relevance for educational attainment. Levin goes on to note that many commentators (Leithwood, Lawton, & Cousins, 1989; Wehlage & Rutter, 1987) have noted the role of schools in creating dropouts including some high schools that actively encourage some

students to leave and do little to discourage others (Radwanski, 1987). This phenomenon is validated by Goldschmidt and Wang (1999) who, after controlling for sector, community factors, policy and practice, and enrollment characteristics, discovered that the remaining variation in high school dropout rates is significant. This implies that there are additional school factors that are systematically related to this variation which could be elucidated through further research.

While graduation requirements are typically established by government, program design is generally an outcome of school district policies and practices. Some authors have argued that schools seek to certify students in ways that directly influence their postsecondary opportunities and that educational systems fail to acknowledge unequal divisions of labor resulting in a largely inequitable and intolerant system that seeks to sort students into success and failures (Holmes, 1985). In addition, program design (graduation requirements, program and course availability, alignment with postsecondary opportunities) and availability of extracurricular activities have been shown to have an impact on student retention. Through the development of a series of logistic regression models, McNeal (1995) discovered that when factors associated with dropout such as race, socioeconomic status, and gender are controlled, involvement in extra-curricular athletics reduced the chances of dropout by 40% (indicated by an increase in model fit). These results are supported by Mahoney's (2000) investigation of the relation between child and adolescent participation in extracurricular activities and patterns of anti-social behavior. Mahoney employed cluster analysis to identify configurations of boys and girls who were homogeneous with respect to behavior and academic performance. He found that participation in school extracurricular activities was associated with an 84% reduction in dropout rate for students who were characterized by a multiple risk profile (older than classmates, high on aggression, below average on academic competence, popularity, and SES).

School climate is comprised of a multitude of variables; however, for purposes here it is defined as factors related to social engagement processes between students, teachers, and administrators. Udry et al (1997) found school connectedness (defined as students feelings of belonging, being close to others, being treated fairly) to have the strongest relationship to positive student behavioral and emotional health outcomes. This is supported by Lee & Burkam (2001) who found that school social organization had the largest impact on student retention. They found that the association of positive social relations between students and teachers (as reported by students) persists even when students' background, demographics, and school sector

are accounted for. While the ability to identify features of schools that are able to hold on to low-performing, uncommitted students was not possible with the HSES data, Lee & Burkam highlight the need for further investigation with a more complete data structure. In this light it is not surprising then that students with emotional or behavioral challenges are more likely to be suspended from school, become disengaged, and ultimately drop out, or get pushed out of school (Long, Fecser, & Brendtro, 1998).

School organization is often considered in studies on school dropout rates, however, it has been demonstrated that school demographics such as classroom size, teacher training, and parental involvement appear to be unrelated to health outcome behaviors (substance use, early sexual involvement, problem behaviors) and emotional well-being (depression, suicidal tendency, anxiety) of adolescents (Udry, Blum, & Mann-Rinehart, 1997). This seems to support the notion that student health adjustment and engagement in school are outcomes directly influenced by social interactions with the school environment.

Cultural difference must be considered when comparing school dropout rates for different countries with significantly different cultural norms and beliefs. For example, in a study of 350 school dropouts in Nigeria, peer influence and school factors were found not to predispose adolescents to drop out (Aluede & Ikechukwu, 2003). Whether these findings can be applied in a North American context may be questionable, however, they do highlight unique cultural differences that may exist in the pathway to dropout. Contradictory evidence is also found by Robb (1995) who reported that 80% of adolescents who drop out of school do so with credits or high grade average, where poor academic performance is rarely the issue. Robb attributes drop out for these individuals to lack of maturation and knowledge required to take responsibility for life planning. In this study the sample is largely homogeneous in race and ethnicity with little cultural diversity, and somewhat heterogeneous in socioeconomic status.

In general, when considering the impact of multiple school context variables such as school climate, school organization, and instructional practices there are a number of studies that suggest that changes during middle school grades such as increased teacher control, decreased teacher efficacy, and decreased quality of student-teacher relationships have a negative impact on student motivation (Eccles, Lord, & Midgley, 1991). Susceptibility to decreases in student motivation may be particularly problematic for students at risk during the developmental turmoil

of early adolescence and such decreases in student motivation are conceivably a result of the mismatch between the students' needs and what the school setting provides.

### **2.4.2 Family System**

Family background has often been recognized as the single most important contributor to school success (Allen-Meares, 2004). Background factors have traditionally been examined through *structural characteristics* of families (e.g., SES, parental education, single and stepparent, poverty) but more recently there has been an attempt to identify the underlying *processes* through which family structure influences school dropout (Allen-Meares, 2004).

Earlier we explored the construct of social capital and the relative importance of it as a filter through which financial and human capital of parents is transmitted to children (Coleman, 1988). This serves to highlight the components of family relationships, communication, and bonding as critical elements in family systems that help provide protective factors and build resilience in children. It also helps position these components within two frameworks that serve to influence how each of these components becomes operationalized as behavioral norms within a family, behavioral norms which may be inconsistent with beliefs and values held by parents. Boushey et al (2001) provide insight into two types of hardships experienced by families with incomes up to two times the poverty line. *Critical Hardships* result from the lack of ability to meet basic needs, such as food, housing, or medical care necessary for survival. *Serious Hardships* are outcomes related to lack of goods and services necessary to support a safe and decent standard of living, such as preventative medical care, quality childcare, and affordable housing. The impact of these conditions on parents' ability to provide their children with social capital is not surprisingly negative. Keeping in mind that amounts of financial capital (e.g., financial resources of the parent) and human capital (e.g., education level of parents) can be independent of one another may help us understand the powerful role that parent-child connectedness plays in promoting positive health outcomes for youth. In other words, wealthy parents may have little emotional engagement with their children or parents with no financial resources may have high emotional engagement with their children.

Another theoretical framework developed to explain school dropout is Poor Family Socialization Theory. This theory acknowledges the critical role of early family socialization

influences such as parental expectations, parent education level, parent divorce, family stress, and parental behavioral control and acceptance. Its central hypothesis is that low expectations of parents for their child's academic achievement, combined with low education attainment of parents, would contribute uniquely to dropout (Battin-Pearson et al., 2000). In a test of theoretical models of dropout, Battin-Pearson et al examined Poor Family Socialization Theory as a predictor of school dropout and found that academic achievement fully mediated the relationship between poor family socialization factors and school dropout. They concluded that low parental expectations for their child's education and their own lack of education contributed to dropping out of school only by having a negative impact on their child's academic achievement, which in turn contributed to dropping out of school.

Parent-child connectedness is a powerful factor in promoting healthy social and emotional outcomes for children and includes such things as doing things together, parental involvement with their child's school or education, and open ongoing communication. These components are examples of family *processes* referred to by Allen-Meares and the profound influence of such processes is demonstrated by Jurkovic et al (2004) in their study of Latino adolescents. Jurkovic et al studied the effects of increased filial responsibilities (e.g., assuming greater responsibility for managing finances for the family, responsibility for and obligation to family members) in conjunction with stressors linked to immigration (e.g., poverty, discrimination) and the effects on Latino adolescents. They found that an increase in developmentally appropriate responsibilities resulted in an increased sense of personal and interpersonal competence, higher rates of success in school, and lower dropout rates. When factors such as number of parents in a household, economic status, and race and ethnicity, are controlled children who report feelings of connectedness to parents are protected against health risks such as emotional distress, suicidal thoughts, substance use, violent behavior, and early sexual activity (Udry, Blum, & Mann-Rinehart, 1997). The implications for understanding more closely the processes underlying these findings may make it possible to create similar conditions in other institutional settings.

Parental supervision may be closely related to parent-child connectedness in that it may be that the parent is present more often and at key periods of their child's development. When a parent is present at key times, and has high expectations for their child's education, it enhances the protection from risky behaviors for their child (Udry, Blum, & Mann-Rinehart, 1997).

Studies have consistently shown that dropouts more often come from families characterized by lack of supervision, permissive parenting style, low expectations for academic achievement, and negative reactions to poor academic achievement (Astone & McLanahan, 1991; Ekstrom, Goertz, Pollack, & Rock, 1986; Fagan & Pabon, 1990; Janosz, Le Blanc, Boulerice, & Tremblay, 1997; Rumberger, 1983). Using data from the Maryland After School Community Grant Program Weisman and Gottfredson (2001) examined at-risk youth involvement in after school programs and found that students attend more days of after school programs when there are higher levels of parental supervision. They also found that dropouts tend to come from neighborhoods characterized by disorganization, alcohol and substance use, violence, and high degrees of stress which is supported by other research findings (Boushey, Brocht, Gundersen, & Bernstein, 2001; Farmer et al., 2004).

#### **2.4.3 Peer Relationships**

While peer relationships are key components of a complex social matrix throughout a persons life cycle, the period of adolescence is one in which peer influence is often intense and the potential for life course alteration is high. Adolescence is characterized by intense social interaction with peers as young people work to form their personal identity, establish independence, and develop internal constructs of their values and beliefs. The pressure to conform to peers' demands may be powerful enough at times for an individual to break some of the parental, school, or societal rules (Aluede & Ikechukwu, 2003). Positive peer relationships have been related to positive mental health, and positive mental health has been associated with school success (Kaplan, Peck, & Kaplan, 1997). At a macro social level, higher dropout rates may be expected in contexts where school achievement is not highly valued while at a micro social level, there may be social facilitation for the process of dropping out of school through at risk students' selective affiliation with others who share values associated with leaving school (Cairns, Cairns, & Neckerman, 1989).

The power of peer influence, however, may vary when cultural differences are recognized and examined. In a study of 350 school dropouts in Edo State, Nigeria, Aluede and Ikechukwu (2003) discovered that peer influence factors were not found to predispose adolescents to drop out of school. Of the factors examined (personal characteristics, societal



factors, home environment, and school environment) peer influence was rated the lowest among the respondents as a factor that predisposed them to leaving school. Although this finding contradicts many studies that demonstrate a significant relationship between school dropout and peer affiliation, it may highlight the need to examine more closely the underlying mechanisms that lead to dropout, mechanisms that are perhaps masked by a broad explanation such as affiliation with deviant or anti-social peers.

#### **2.4.4 Leisure and Recreation**

Physical fitness, engagement in healthy leisure and recreation activities, and engagement with others through recreational activities has been shown to positively influence youth engagement in healthy lifestyle activities and socializing experiences. The results of several studies suggest a positive association between physical activity and academic outcomes including increased concentration and improved academic performance in a variety of academic content areas (Centers for Disease Control, 1990; Kolbe, Green, Foreyt et al., 1986; Field et al., 2001, Aaron & Gallagher 2003). Regular exercise may also combat depression or relieve stress (Brosse, Sheets, Lett & Blumenthal, 2002) and lack of exercise has been found to be associated with psychosocial problems such as loneliness, depression, and emotional distress (Page & Tucker, 1994), which may alter the potential for academic success.

Perhaps one of the most important outcomes of quality leisure activities and effective use of leisure time has to do with the engagement of youth in pro-social activities and relationships with adults and other peers. Communities that provide access and encouragement for youth to engage in productive use of leisure time provide a critical framework for health promotion, engagement, and develop environmental conditions that promote protective factors for youth.

## **2.5 INDIVIDUAL FACTORS**

### **2.5.1 Social Competence**

Social Competence is often used synonymously with social skills and is perhaps the most standardized mode of reporting findings with respect to youth social and anti-social behaviors. Research on social skills and social competence, particularly studies that measure intervention program effectiveness for building social skills, frequently report the process of identifying anti-social youth as candidates in need of this intervention. It may be worth noting that there is limited research that provides a measure of social competence which would support the notion that youth who engage in anti-social behaviors do so as an outcome of limited social skills. Caplan et al (1992) report that recent research on social competence indicates that skills are not automatically and consistently applied to each social situation and that teaching information about general competence may yield largely ineffective outcomes if opportunities are not provided for students to practice and apply learned skills to relevant social tasks. They also point out that general skills training must be combined with domain-specific (aggression, impulsivity, depression) instruction and opportunity for practice.

Weissberg et al (1991) incorporate a systems-based approach to social competence promotion in youth. They point out that recent research in behavioural epidemiology indicates that mental health issues often coexist with social problems such as school failure and delinquency as well as with individual health problems such as substance abuse. They challenge traditional mental health interventions that target the specific behaviours rather than focusing more on the predictive elements that lead to the behaviours since these predictive elements are more amenable to intervention than the behaviours themselves. This approach exemplifies the intricate relationship between contextual factors and individual health outcomes and how effective intervention may largely depend on effectively understanding the relative importance and threshold of each variable in the equation of problem pathways. These pathways and relationships are further complicated by the changing contexts within which social skills must be utilized. Attaining social competence in adolescence is a uniquely complicated process often requiring sophisticated behavioural repertoires to effectively manage peer relationships, family relationships, and educational challenges (Allen, Weissberg, & Hawkins, 1989).

### **2.5.2 Behaviour Patterns**

The externalizing nature of negative behavioral outcomes has drawn particular attention in education. It is perhaps the most recognizable health adjustment outcome and educators can often report on problematic behaviors of students early in the child's school career, and early in a class in the case of high school aged students. There has been extensive research in the fields of psychology, sociology, and anthropology on the nature of behavioral outcomes, their meanings, and their origins and while each may subscribe to differing schools of thought or explanations, it is clear that the individual and their environment are connected through a complex matrix of interactions and influences.

Within an educational setting, however, behavior is frequently interpreted by adults as deliberate and calculated efforts by the student to oppose authority rather than as overt and observable outcomes of psychosocial health adjustment problems. Since boys have been shown to have greater likelihood of demonstrating psychosocial health problems through negative behavioral outcomes, it is not surprising that boys tend to out number girls on discipline related problems in school.

General Deviance Theory, which includes delinquent behaviour and attitudes, drug use, early sexual activity and pregnancy, and the relationship to school dropout has been consistently reported in the literature (Battin-Pearson et al., 2000). Although literature often reports individual deviant behaviours as key predictors of school dropout, liabilities, similar to those faced by other broad conceptual explanations for dropout (social, human, and financial capital), exist. Upon closer examination of such behaviours it becomes evident that specific behaviours, rather than the predictive elements that lead to the behaviours, become correlated with outcomes such as school dropout rather than provide the statistical evidence that would support claims of predictive validity.

### **2.5.3 Emotional Health**

While boys tend to demonstrate greater externalization of behavior, research shows that girls are more likely to internalize their adjustment problems often resulting in emotional health adjustment issues. This internalization is often an asset for girls within a school context since it is

rarely detected by adults in the early stages and they are less disruptive and defiant in the classroom or school. Evidence to support this phenomenon can be found in the U.S. based Manhattan Institutes Report (Greene, 2006), which challenges the Economic Policy Institutes report (Mishel & Roy, 2006) for providing inflated high school graduation rates, where they report that female students graduate high school at a higher rate than male students (Nationally, 72 percent of female students graduated, compared with 65 percent of male students) and that the gender gap in graduation rates is particularly large for minority students. Although the graduation rates for girls has been reported to be higher than boys, the negative health outcomes for girls may be exacerbated by the fact that their emotional health problems tend to go unnoticed until they begin to affect psychosocial health in more observable outcomes such as severe mood changes, depression, and physical health problems such as eating disorders.

The crucial link between suicide and depression is of particular significance when exploring the association between depression and academic achievement. For some students the symptoms consist of low self-esteem, discouragement, irritability, feelings of helplessness, fatigue, and diminished ability to concentrate. Other students may exhibit behavioral problem outcomes that result in deterioration in academic performance, truancy, and other self-destructive behaviors. Regardless of the degree or severity of emotional health problems it presents a significant risk to youth, particularly youth with special needs (Jaffee et al., 2005). In addition, Jaffee et al highlight the positive correlation between contextual community-level factors (finances, housing, and employment) and emotional stress in youth.

#### **2.5.4 Physical Health**

Despite the recent trends toward high rates of obesity and health related problems for youth there remains a substantive research base that identifies physical health as foundational to the overall health of young people. Yet in spite of this extensive research and knowledge about the importance of physical health we continue to develop educational policies, regulations, curriculum instruction, and graduation requirements that neglect the physical health of students.

While there is frequent reference to the importance of physical health needs as foundational to learning, there is little research on school dropouts that incorporates or

investigates physical health status and its relationship to the phenomenon of school dropout. This study aims to examine the physical health adjustment profiles of dropouts and non-dropouts.

### **2.5.5 Substance Use**

Substance use is often described as an outcome of previously undetected and untreated psychosocial health problems.

Studies have shown that drug use can interfere with cognitive functioning, memory, sensation, and perception. Researchers confirmed that abuse of tobacco, alcohol, and other drugs can stifle creativity, thwart imagination, and suppress ambition, all leading to a possible decrease in academic performance (Symons, Cinelli, James & Groff, 1997; Hopps, Davie & Lewin, 1999). Heavy episodic drinking may be defined as the consumption of five or more drinks in a row at least once in the past two weeks for men and four or more drinks in a row in the past two weeks for women (Wechsler & Nelson, 2001). Alcohol consumption among youth has realized a significant growth pattern of use over the past decade. Several studies have indicated that problem-drinking behavior can lead to significant academic difficulties including poor academic performance and lower course grades (Wolaver, 2002; Wood, Sher & McGowan, 2000; Smith, Collins, Kreisberg, Volpicelli & Alterman, 1987).

Illicit drug use consisting of marijuana, various stimulants, and inhalants also plays a significant role in the social context of high schools. Numerous studies have found that young people who use illicit drugs such as marijuana tend to be characterized by reduced levels of academic achievement, negative attitudes towards school, reduced satisfaction with school, poorer overall school performance, greater absenteeism, higher rates of expulsion or suspension from school; and higher rates of school dropout (Brook, Brook, Rosen & Rabbitt, 2003; Lynskey & Hall, 2000).

The association between illicit drug usage and educational achievement may reflect the fact that risk factors and life processes that encourage the use of illicit drugs such as deviant peer pressure and non-supportive family relationships, may also encourage educational underachievement. Research by Fergusson, Horwood & Beautrais (2003) reports that, after adjusting for several confounding factors such as family socio-economic status, high school achievement

and adolescent conduct problems, there remained a statistically significant negative association between heavy cannabis use (100 or more uses by age 20) and academic success.

Glendinning, Hendry & Shucksmith (1995) and Musgrave-Marquart, Bromley & Dalley (1997) state that in line with several other studies, smoking appears to be the strongest predictor of educational success. Smoking may indicate that an adolescent lacks control over his or her life or it may be an attempt to help manage stress during a time of increased pressure to succeed academically. Although no single health compromising or health promoting lifestyle has been identified, several health-compromising behaviors have been found to be associated with smoking. High-risk behaviors, such as using marijuana, drinking heavily, and having multiple sex partners are the strongest correlates of smoking status. In theory, smoking may be the main indicator of a rebellious lifestyle in which education is given less importance and more interest is directed towards other aspects of life, such as peers and “street culture” (Glendinning et al, 1995).

## **2.6 RELATIONSHIPS AMONG VARIABLES**


For the purposes of this research study the relationships among the variables within the institutional and individual factor clusters was included as an added investigation to explore the statistical relationships that may exist among the domains.

While the relationships and influences of institutional context factors on individual health constructs are complex, there is evidence to support the notion that these two frameworks are codependent. There have been a large number of studies conducted over that past fifteen years that have utilized large databases of information such as the National Longitudinal Study, High School Effectiveness Supplement (HSES) of the NELS:88 study, in an effort to delineate the profiles of school dropouts by investigating variables that go beyond traditionally broad classifications and assumptions such as SES, race and ethnicity, and academic achievement. These studies are consistently demonstrating that once variables such as behavior and student background characteristics are taken into account, other factors such as demographic composition and sector are almost completely unrelated to dropout rates (Lee & Burkam, 2001). One can consider then that if controlling for these variables effectively reduces the statistical

significance of school dropout rates, then there is support for the argument that the health adjustment, and in particular the interactions, influences, and adaptations between individual and institutional factors may play a greater role in the pathway to dropout. In other words, if negative behavior adjustment is controlled and the subsequent dropout rate comparison to students without behavior problems is insignificant, then is it not plausible that individual factor health status outcomes, which are influenced by institutional contexts, become critical measures of risk for school dropout.

Figure 1 is a Table Matrix designed to illustrate general alignment between traditional and non-traditional predictors of school dropout. In addition, three columns are included to align potential implications for policy within health, education, and health-education partnerships that address negative institutional and individual health outcomes by introducing interventions that may mitigate negative health outcomes and potential for school dropout.

**Figure 1.** Traditional/Non-Traditional Predictors of School Dropout and Health Domain Matrix

“X” Represents overlap/alignment between Traditional Predictors/Policy Implications and the Domains		Traditional Predictors of School Dropout		Policy Implications: Targeted Intervention & Introduction of Intervening Variables		
Domain Clusters	Individual Domain Variables	Socioeconomic Status	Race & Ethnicity	Health	Education	Health/Education
<b>Institutional/Contextual Influences</b>	Family System	X	X	X		X
	Peer Relationships	X	X	X	X	X
	School Adjustment		X		X	
	Leisure & Recreation	X	X	X	X	X
<div style="text-align: center;">  <p><b>Influences on Individual Health Outcomes</b></p> </div>						
<b>Individual Health Outcomes</b>	Physical Health	X		X	X	X
	Behaviour Patterns	X	X	X	X	X
	Emotional Health	X	X	X		X
	Social Competence	X	X	X	X	X
	Substance Use	X	X	X	X	X



### **3.0 METHODOLOGY**

The purpose of this investigation was to explore the health adjustment scores of school dropouts and non-dropouts across nine domains; Physical Health, Emotional Health, Social Competence, Behaviour Patterns, Substance Use, Peer Relationships, Family System, School Adjustment, Leisure and Recreation. The first aim of this study was to compare the overall mean scores of dropouts and non-dropouts across all nine domains. The second aim was to analyze the mean scores of dropouts and non-dropouts comparing each individual domain. The third aim was to examine the relationship of clustered scores for the individual factor domains and institutional factor domains for dropout and non-dropouts.

#### **3.1 SAMPLE**

The participants in this study were high school students (non-dropout group) and former high school students (dropout group) in a large district school board in Ontario, Canada. Students were classified as “dropouts” if they were not enrolled in regular school program at their home school and were now enrolled in one of three off-site regional Centers for Individual Studies as part-time students in an alternative program. Students who were currently enrolled in regular school programs and attending one of the six participating high schools in the region were classified as “non-dropouts”.

Group 1 consisted of 92 school dropouts between the ages of 15 and 21 (52.2% male, 47.8% female). Group 2 consisted of 429 non-dropouts between the ages of 15 and 20 (46.9% male, 53.1% female). The criterion used to classify non-dropouts generally aligns with criteria used in previous research studies, however, the criteria used to classify dropouts’ warrants some discussion. There is a wide range of definitions utilized to classify students as school dropouts.

While consensus has been difficult to achieve from district to district, region to region, and country to country, there is a common underlying theme with which to establish common ground. The defining criterion used for inclusion in the dropout group in this study was the departure from regular program at a regular high school at some point. In other words, there was a defining moment of interruption of their natural or typical pathway to high school graduation. Secondly, the dropout students had to be currently enrolled in an off-site alternative program. The length of time between departure from regular high school program to re-engagement and enrollment in one of the satellite campuses was not considered. It is conceivable that the students included in this group were not representative of the more extreme cases of school dropouts. As a result, finding significant difference between the groups may be less likely, however, statistically significant differences within this framework may have important implications for the early identification of students at risk of leaving school prior to graduation.

All students within the participating schools, sites, and grades were provided with an overview of the study purpose and design for web-based data collection through an anonymous on-line questionnaire. Interested students (under age 18) were given an informed consent form and were included in the study if they provided written parent consent. Students 18 years of age or older were permitted to sign the informed consent form if they wished to participate. The school district Research Review Committee and the University of Pittsburgh's Institutional Review Board (IRB) approved the consent form and all procedures of the proposed study (Appendix B). No remuneration or incentives were offered to any student for participation in the study. There were no other criteria used for inclusion or exclusion from the study.

This age and grade range was intentionally chosen because of the legal requirements for students under 16 years of age to attend regular school. Students in Ontario reach the age of 16 years between January and June (second semester of their grade 10 year), between July and August (summer holiday), or September to December (first semester of their grade 11 year) at which time they are legally eligible to drop out of school.

### 3.2 DESIGN AND SETTING

Three CIS (Center for Individual Studies) sites for school dropouts and five regular high schools in a large school district in Ontario, Canada participated in this study. Of the three CIS sites one was in a suburban location, one in a small town, and one in a rural location. Of the five participating high schools one was in a suburban location, two in small towns, and two in rural locations.

The principal investigator of this study trained the designated contact person at each school or site in regard to the purpose of the study, protocol for implementation, and utilization of the web-based application for access to the on-line screening inventory. Students who provided written consent were given an anonymous login code and password. Completion of the on-line inventory took place at school with indirect supervision to ensure privacy.

The independent variable was school enrollment status and the dependent variables were the nine domains of health adjustment. School dropouts were defined as students who left regular school without a graduation diploma. Dropouts were largely students who had dropped out of regular high school within the past two years and were now at various stages of involvement with one of the regional Centers for Individual Studies. Non-dropouts were students currently enrolled in their regular high school.

The *Adolescent Development Screening Inventory for Education* (ADSI-E), a 154 item inventory, was administered to each study participant to provide a quantitative measure of health adjustment on each of the independent variables. The ADSI-E (one-year version) was utilized and the subject was required to respond either “yes” or “no” to each item. A severity score for each domain (independent variable) was calculated by dividing the number of endorsements (answered “yes” to an item) in the domain by the total number of items in the domain and then multiplying the score by 100 (possible score range 0% to 100%). In addition, an overall severity score across all domains was calculated by dividing the total number of endorsements across all items divided by the total number of ADSI-E health items ( $n = 146$ ) and then multiplying the score by 100 (possible score range 0% to 100%).

The ADSI-E is an adaptation of the DUSI-R, and instrument and Construct validity of the ADSI-E<sup>2</sup> is based on multiple validation studies of the DUSI-R. Construct validity has been well established through research and corresponding literature since 1991, affirming that the questions measure what they are intended to measure within each domain.

### **3.3 DATA COLLECTION**

A secure web-based application was developed to provide secure on-line login, password protected access to the ADSI-E. No identifiers were used in developing and assigning the anonymous login codes and only the researcher had secure password protected access to the database of responses. The ADSI-E was designed to collect quantitative data across nine domains of health adjustment. The web application utilize HTML forms with multiple-choice (yes/no) boxes, and once completed and submitted by the student the template and responses were automatically locked. Unlocking and alteration permissions of any individual responses were not possible by the researcher. On-line access was asynchronous in order to provide schools with flexibility to schedule student access at a time that was least disruptive to their instructional program. The on-line ADSI-E took students on average 20 minutes to complete and results were generated live in real time. Raw data was then exported in “csv” format and imported into Oracle (for data organization and management) and then imported into SPSS for statistical analysis.

### **3.4 STATISTICAL ANALYSIS**

There were three primary analyses conducted on the data from this study, each one addressing one the study’s three specific aims. The first analysis was conducted in order to determine if the overall health adjustment scores were significantly different for school dropouts and non-

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<sup>2</sup> The ADSI-E is an adaptation of the DUSI-R with minor variations to maintain psychometric properties. Construct Validity for the DUSI-R has been established and a complete list of publications can be obtained by contacting the author at [weatherbee.consultants@sympatico.ca](mailto:weatherbee.consultants@sympatico.ca).

dropouts. The second analysis was designed to determine if there was a significant difference in each individual domain health adjustment score of dropouts and non-drop outs. Finally, a bivariate correlation analysis was performed to investigate the relationship between the individual factor (Physical Health, Emotional Health, Social Competence, Behaviour Patterns, and Substance Use) and institutional factor (School Adjustment, Family System, Peer Relationships, and Leisure and Recreation) clusters for dropouts and non-dropouts.

### **3.4.1 Descriptive Statistics**

Overall Problem Density was calculated by dividing the total number of endorsements across all items divided by the total number of ADSI-E health items ( $n = 146$ ) and then multiplying the score by 100 (possible score range 0% to 100%).

Absolute Problem Density scores for each domain were calculated by dividing the number of endorsements (answered “yes” to an item) in the domain by the total number of items in the domain and then multiplying the score by 100 (possible score range 0% to 100%).

Cluster Problem Density Scores for individual and institutional factor domains were calculated by averaging the Absolute Problem Density scores for the clustered domains (institutional cluster = 4 domains, individual cluster = 5 domains). Mean scores and standard deviations are reported in Tables 1, 3, and 5.

Correlational analysis was conducted for the overall group, dropout group, and non-dropout group on the following variables:

1. Overall problem density scores of dropouts and non-dropouts.
2. Absolute problem density scores for each domain of dropout and non-dropout.
3. Individual factor and institutional factor domain cluster scores of dropouts and non-dropouts.

Correlation results are reported in Tables 7, 8, and 9.

### **3.4.2 Inferential Statistics**

A one-way ANOVA was conducted on each domain, the institutional cluster of domains, the individual cluster of domains, and the overall score. ANOVA were computed using  $\alpha = .05$

and results include df, F values, level of significance, and effect size (partial Eta squared). ANOVA results are reported in Tables 2, 4, and 6.

### **3.4.3 Validity and Reliability of Results**

Construct validity of the ADSI-E<sup>3</sup> is based on multiple validation studies of the DUSI-R. Construct validity has been well established through research and corresponding literature since 1991, affirming that the questions measure what they are intended to measure within each domain. The concurrent validity of the Substance Use and Emotional Adjustment domains was established in relation to the K-SADS, a semi-structured clinical interview. Correlations between the scores in these two domains with the number of symptoms elicited by direct interview for drug abuse and total emotional disturbance were .72 and .65 respectively. The Social Competence scale has been found to correlate -.51 with the Adolescent Assertiveness Expression Scale. A correlation of .53 was observed between the Physical Health score and the score from a standard health-rating checklist. In a sample of 191 youths using the DUSI-R, the average internal reliability coefficient was .74 for males and .78 for females across the domains. The mean split-half correlations were .70 for males and .67 for females. The mean test-retest (one week) coefficients were .95 and .88 for males and females respectively.

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<sup>3</sup> The ADSI-E is an adaptation of the DUSI-R with minor variations to maintain psychometric properties. Construct Validity for the DUSI-R has been established and a complete list of publications can be obtained by contacting the author at [weatherbee.consultants@sympatico.ca](mailto:weatherbee.consultants@sympatico.ca).

## **4.0 RESULTS**

The purpose of this study was to explore the health profiles of high school dropouts and non-dropouts. Nine domains of health (Physical Health, Emotional Health, Social Competence, Behaviour Patterns, Substance Use, Peer Relationships, School Adjustment, Family System, Leisure and Recreation) were measure using the ADSI-E self report inventory. The maximum score possible on each measure was 100.

The first aim was to determine if a significant difference in overall health adjustment existed between the two groups. Secondly, each individual domain was examined to identify significant differences that may be unique to a specific domain. Finally, the domains were clustered into institutional/contextual factors (Peer Relationships, School Adjustment, Family System, Leisure and Recreation) and individual health outcomes (Physical Health, Emotional Health, Social Competence, Behaviour Patterns, Substance Use) to aggregate scores in order to examine the relationship between contextual factors and individual health outcomes.

### **4.1 DESCRIPTIVE AND INFERRENIAL STATISTICS**

#### **4.1.1 Overall Problem Scores**

The overall problem scores are presented in Tables 1 and 2. The overall score for dropouts ( $M = 55.66$ ,  $SD = 24.34$ ) was significantly higher than the overall score for non-dropouts ( $M = 45.61$ ,  $SD = 20.56$ ),  $F(1, 537) = 17.73$ ,  $p < .001$ .

**Table 1.** Overall Mean Scores & Standard Deviations of Dropout/Non-dropout

Group	N	Mean	Std. Deviation
Dropout	97	55.660	24.378
Non-dropout	442	45.606	20.555

**Table 2.** Overall Problem Score including df, F Value, level of Sig., and Effect Size

Group	Df	F	Sig.	Effect Size (Partial Eta Squared)
Overall	1, 537	17.738	< .001	.032

#### 4.1.2 Absolute Problem Scores

The absolute problem scores are presented in Tables 3 and 4. All of the absolute scores were significantly higher ( $p < .05$ ) for dropouts compared to non-dropouts with the exception of Emotional Health  $F(1, 493) = 3.72, p = .054$ . A two-tailed analysis was utilized; however, a one-tailed analysis could have yielded a significant difference for Emotional Health.

**Table 3.** Absolute Mean Scores & Standard Deviations of Dropout/Non-dropout

Domain	Group	N	Mean	Std. Deviation
Physical Health	Dropout	93	4.280	2.013
	Non-dropout	436	3.454	1.937
Leisure & Recreation	Dropout	94	5.649	1.916
	Non-dropout	433	4.737	2.177
School Adjustment	Dropout	91	9.813	4.297
	Non-dropout	431	6.865	3.942
Family System	Dropout	88	6.227	3.183
	Non-dropout	430	3.984	3.292
Behaviour Patterns	Dropout	85	9.082	3.840
	Non-dropout	426	8.042	4.078
Social Competence	Dropout	82	4.573	3.147
	Non-dropout	416	3.726	2.718
Peer Relationships	Dropout	85	7.835	2.927
	Non-dropout	420	5.900	2.973
Emotional Health	Dropout	82	8.585	3.617
	Non-dropout	413	7.697	3.847
Substance Use	Dropout	85	6.024	4.257
	Non-dropout	406	3.192	3.491



**Table 4.** Absolute Problem Scores including df, F Values, levels of Sig., and Effect Sizes

<b>Domains</b>	<b>df</b>	<b>F</b>	<b>Sig.</b>	<b>Effect Size</b> (Partial Eta Squared)
Physical Health	1, 527	13.728	<.001	.025
Leisure & Recreation	1, 525	14.121	<.001	.026
School Adjustment	1, 520	40.687	<.001	.073
Family System	1, 516	34.308	<.001	.062
Behaviour Patterns	1, 509	4.697	.031	.009
Social Competence	1, 496	6.306	.012	.013
Peer Relationships	1, 503	30.107	<.001	.056
Emotional Health	1, 493	3.716	.054	.007
Substance Use	1, 489	42.673	<.001	.080

#### 4.1.3 Institutional and Individual Clustered Problem Scores

The institutional and individual cluster scores are presented in Tables 5 and 6. The overall individual score for dropouts ( $M = 28.76$ ,  $SD = 14.50$ ) was significantly higher than the overall score for non-dropouts ( $M = 24.85$ ,  $SD = 12.25$ )  $F(1, 535) = 7.51$ ,  $p = .006$ . The overall institutional score for dropouts ( $M = 27.77$ ,  $SD = 10.42$ ) was significantly higher than the overall score for non-dropouts ( $M = 20.82$ ,  $SD = 9.50$ ),  $F(1, 535) = 40.41$ ,  $p < .001$ . This large of an  $F$  value is unlikely attributable to just the large sample size. Future research may yield evidence that supports the hypothesis that contextual factors are important in influencing individual health outcomes that could lead to disengagement.

**Table 5.** Individual & Institutional Cluster Mean Scores & Standard Deviations of Dropout/Non-dropout

<b>Domain</b>	<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Overall Individual Score	Dropout	96	28.760	14.502
	Non-dropout	441	24.846	12.254
Overall Institutional Score	Dropout	95	27.768	10.419
	Non-dropout	442	20.817	9.502

**Table 6.** Individual & Institutional Cluster Scores including df, F Values, levels of Sig., and Effect Size

Clusters	Df	F	Sig.	Effect Size (Partial Eta Squared)
Overall Individual Score	1, 535	7.512	.006	.014
Overall Institutional Score	1, 535	40.414	<.001	.070

#### 4.1.4 Correlations

Table 7 is a correlation matrix for all participants displaying correlations for domain scores, individual factor scores, institutional factor scores, and overall scores. It is worth noting that all correlations were found to be highly significant ( $p < .001$ ) and ranged from the low being  $r = .17$  between Social Competence and Substance Use. To the high being  $r = .70$  between Behaviour Patterns and Emotional Health. In addition to the highly significant individual domain correlations, high correlations were found between the overall score and the individual health outcome cluster score ( $r = .96$ ,  $r < .001$ ), the overall score and institutional cluster score ( $r = .93$ ,  $r < .001$ ), and the individual health outcome cluster and institutional cluster ( $r = .76$ ,  $p < .001$ ). These findings indicate that there is a significant relationship between the individual domains, the individual health score, and the institutional factor score that could be the focus of further investigation.

**Table 7.** Overall Group Correlation Matrix of Domains, Overall Score, Individual & Institutional Clusters

	Physical Health	Leisure Recreation	School Adjustment	Family System	Behaviour Patterns	Social Competence	Peer Relationships	Emotional Health	Substance Use	Overall Score	Individual Score	Institutional Score
Physical Health		.379**	.379**	.442**	.402**	.320**	.361**	.435**	.392**	.548**	.555**	.470**
Leisure Recreation			.477**	.422**	.426**	.319**	.414**	.416**	.373**	.575**	.464**	.646**
School Adjustment				.506**	.607**	.317**	.563**	.565**	.501**	.738**	.589**	.831**
Family System					.547**	.447**	.481**	.537**	.475**	.728**	.619**	.772**
Behaviour Patterns						.489**	.553**	.702**	.472**	.820**	.844**	.688**
Social Competence							.280**	.534**	.172**	.566**	.634**	.423**
Peer Relationships								.513**	.632**	.743**	.640**	.778**
Emotional Health									.432**	.806**	.852**	.651**
Substance Use										.692**	.678**	.627**
Overall Score											.955**	.928**
Individual Score												.775**
Institutional Score												

Note: Pearson Correlations are 2-tailed, \* correlation is sig. at .05, \*\* correlation is sig. at .01

Table 8 is a correlation matrix for dropouts displaying correlations for domain scores, individual factor scores, institutional factor scores, and overall scores. There are several highly significant correlations worth noting for this group. The highest correlation was found between Behaviour Patterns and Emotional Health, ( $r = .66, p < .001$ ). In addition, high correlations were found between Family System and Behaviour Patterns ( $r = .61, r < .001$ ), and Behaviour Patterns and Peer Relationships, ( $r = .60, r < .001$ ). Highly significant correlations were also found between the overall score and the individual health outcome score ( $r = .96, r < .001$ ), the overall score and institutional factor score ( $r = .93, r < .001$ ), and the individual health outcome score and institutional factor score ( $r = .76, p < .001$ ). These findings indicate that there is a significant correlation between the individual domains, the individual health outcome score, and the institutional factor score suggesting that the overall score alone could yield an efficient quantitative measure of general health adjustment to help identify potential school dropouts. Further investigation into these relationships may be warranted.

**Table 8.** Dropout Correlation Matrix of Domains, Overall Score, Individual & Institutional Clusters

	Physical Health	Leisure Recreation	School Adjustment	Family System	Behaviour Patterns	Social Competence	Peer Relationships	Emotional Health	Substance Use	Overall Score	Individual Score	Institutional Score
Physical Health		.309**	.203	.280**	.347**	.228**	.156	.373**	.163	.409**	.458**	.285**
Leisure Recreation			.522**	.251*	.281*	.162	.395**	.426**	.199	.537**	.406**	.635**
School Adjustment				.335**	.554**	.136	.525**	.561**	.440**	.655**	.495**	.796**
Family System					.607**	.402**	.376**	.530**	.430**	.659**	.578**	.676**
Behaviour Patterns						.454**	.603**	.664**	.575**	.852**	.876**	.712**
Social Competence							.159	.506**	-.034	.446**	.560**	.282*
Peer Relationships								.478**	.573**	.705**	.608**	.741**
Emotional Health									.358**	.797**	.820**	.672**
Substance Use										.660**	.669**	.554**
Overall Score											.958**	.930**
Individual Score												.790**
Institutional Score												

Note: Pearson Correlations are 2-tailed, \* correlation is sig. at .05, \*\* correlation is sig. at .01

Table 9 is a correlation matrix for non-dropouts displaying correlations for domain scores, individual factor scores, institutional factor scores, and overall scores. Like the dropout group, Behaviour Patterns is highly correlated with Emotional Health, ( $r = .71, p < .001$ ). School Adjustment was found to be highly correlated with Behaviour Patterns, ( $r = .62, p < .001$ ) suggesting that school engagement may be associated with a reduction in anti-social behaviours. The highest correlations were found between the overall score and institutional factor score ( $r =$

.93,  $r < .001$ ), the overall score and individual health outcome score ( $r = .96$ ,  $r < .001$ ), and the individual health outcome cluster and institutional factor cluster ( $r = .77$ ,  $p < .001$ ).

**Table 9.** Non-Dropout Correlation Matrix of Domains, Overall Score, Individual & Institutional Clusters

	Physical Health	Leisure Recreation	School Adjustment	Family System	Behaviour Patterns	Social Competence	Peer Relationships	Emotional Health	Substance Use	Overall Score	Individual Score	Institutional Score
Physical Health		.373**	.388**	.448**	.402**	.327**	.374**	.440**	.415**	.567**	.572**	.487**
Leisure Recreation			.441**	.423**	.439**	.338**	.386**	.405**	.373**	.570**	.467**	.636**
School Adjustment				.499**	.617**	.339**	.536**	.568**	.461**	.739**	.598**	.822**
Family System					.530**	.447**	.461**	.535**	.433**	.722**	.613**	.770**
Behaviour Patterns						.490**	.538**	.706**	.439**	.822**	.840**	.693*
Social Competence							.285**	.536**	.191**	.587**	.644**	.442**
Peer Relationships								.515**	.616**	.731**	.629**	.767**
Emotional Health									.446**	.818**	.862**	.660**
Substance Use										.673**	.665**	.600**
Overall Score											.956**	.926**
Individual Score												.773**
Institutional Score												

Note: Pearson Correlations are 2-tailed, \* correlation is sig. at .05, \*\* correlation is sig. at .01

## 4.2 RESULTS OF ANALYSIS

### 4.2.1 Results of Primary Analysis

All the variables discriminated the dropout group from the non-dropout group at a statistically significant level. In addition to the high levels of significance, the ADSI-E was sensitive enough to detected small, but significant, differences between the dropout and non-dropout groups in all domains, the overall score, and when comparing institutional and individual domain cluster scores. These results confirm that the ADSI-E can identify subtle but significant differences in mean scores between the groups in all domains. All nine domains detected differences between the groups at R squared  $< .08$ .

### 4.2.2 Hypothesis Testing

A one-way ANOVA, using an alpha level of .05, was used to test the following hypotheses:

Hypothesis 1: The overall health adjustment scores of school dropouts will be significantly greater than non-dropouts. Results demonstrate that the overall score of the dropout group was significantly higher than the non-dropout group  $F(1, 537) = 17.738, p < .001$ . (See Tables 1 and 2)

Hypothesis 2: There will be significantly greater health adjustment scores for school dropouts in one or more of the nine domains of health: Physical Health, Emotional Health, Social Competence, Behaviour Patterns, Substance Use (Individual Factors), Peer Relationships, Family System, School Adjustment, Leisure and Recreation (Institutional Factors) of school dropouts compared to non-dropouts. With the exception of the Emotional Health domain  $F(1, 493) = 3.716, p = .054$ , all domains demonstrate significantly higher scores for the dropout group compared to the non-dropout group. (See Tables 3 and 4)

Hypothesis 3: There will be a significant difference between the composite scores of individual factors and institutional factors for both dropouts and non-dropouts and the manifest differences will be more salient for dropouts. Both the individual cluster score  $F(1, 535) = 7.512, p = .006$ , and the institutional cluster score  $F(1, 535) = 40.414, p < .001$ , were significantly higher for dropouts compared to non-dropouts. (See Tables 5 and 6)

## **5.0 DISCUSSION AND CONCLUSIONS**

The results of this study indicate that the ADSI-E is an efficient instrument for measuring the health adjustment of adolescents. In addition, this instrument demonstrates a high degree of sensitivity for detecting small but significant differences in all nine domains of health when comparing school dropouts to non-dropouts. The hypotheses established at the outset have been statistically validated making it clear that there are significant and measurable differences in the health profiles of school dropouts compared to non-dropouts.

Examining and understanding any empirical differences and similarities between school dropouts and non-dropouts could impact the development of interventions for reducing risk of school dropout as well as the generalizability of study results. As the rate of mental health problems continues to increase in adolescents, the use of empirical data to develop successful interventions becomes critical. These interventions can be preventative, promotional, diagnostic, or treatment based.

Getting parents involved with a community or school-based intervention may also benefit adolescents. Social support of family can have a positive impact on outcomes. Access to timely health care and mental health services, primary care practitioners (such as nurse practitioners), the school nurse, or a school counselor have become diminishing opportunities for many families and youth. In many cases the opportunity for mental health screening and referral is non-existent. In an effort to prevent the continued rise in negative health outcomes, and decrease the subsequent costs to the individual and society as a whole, it is imperative that a multidisciplinary approach be taken to study at-risk populations. Knowledge gained from additional research on school dropouts would provide greater understanding of the issues that face this population and for the development of empirically supported, comprehensive school and community based interventions. Utilizing the ADSI-E in a longitudinal study could yield important insights into the current and changing health needs of adolescents and would build upon the findings of this study

providing stronger conclusions as a basis for developing targeted interventions. In addition, longitudinal research could examine the predictive validity of the ADSI-E establishing an early and efficient screening process for identifying potential school dropouts at a developmental stage where effective intervention could significantly reduce chances of disengagement.

It should be noted that this study design was founded on the investigators beliefs that prior approaches to understanding school dropout, using traditional predictors such as socioeconomic status, race and ethnicity, are largely classifications and correlations involving variables for which there is little or no opportunity to affect. The ability to affect large scale changes in socioeconomic status is limited and the ability to change race and ethnicity is non-existent. As a result, investigations based on unchangeable variables provide little insight into what can be done to reduce risk. This study utilized the ADSI-E as a means of quantifying nine constructs of health, all of which can be positively affected through targeted prevention and intervention programs.

To this end, the implications of these findings may best be utilized to inform school reform and public policy decisions aimed at promoting health in general, and school health specifically, for the purposes of influencing positive adolescent health outcomes and reducing the risk of school dropout. Developing a systematic approach to school health promotion and targeted prevention and intervention programs ought to be a shared responsibility of education and public health. It may be argued that the ability to efficiently meet the requirements of such a mandate will largely depend on policy changes required to establish a joint ministry or division of health and education where such policies are supported by the funding necessary to create and sustain cycles of improvement.

## **5.1 STUDY LIMITATIONS**

Reaching consensus on the definition of “school dropout” continues to provide challenges in the research community. This study examined the health adjustment profiles using a definition of school dropouts as those who had left their regular high school and were currently enrolled in an alternative off-site program. Others have used an extremist definition of dropouts characterized by complete disengagement from the school system. While this study did not include any

dropouts fully disengaged from school program some may consider this a limitation of the study. However, it is conceivable that observing significant differences with this less extreme group of dropouts should have been less likely to yield significant differences than if a more extreme group of dropouts were measured. As a result, the significant findings in this study demonstrate the potential for detecting subtle differences in dropouts and non-dropouts despite the degree to which they have disengaged from school. Generalizing findings based on more extreme profiles of school dropouts to a less extreme dropout group, such as the participants in this study, may be more problematic. There may be inherent risks associated with generalizing findings from more extreme cases who may not be representative of partially disengaged students. On the other hand the generalizability of this study, based on a more conservative definition of school dropout, should be representative of a more extreme group of disengaged students. Had this study included totally disengaged students one could expect that greater differences in the health adjustment profiles would be found between dropouts and non-dropouts.

There are limitations in generalizing these results to adolescents in other geographical regions and to other cultures due to the sample being primarily Caucasian males and females. The overall and absolute health adjustment scores for different populations may not be the same as those found in this study since the students' socioeconomic status, ethnicity, and cultural background may yield different health profiles. The strength in the use of the ADSI-E lies in its versatility of use. This inventory provides a relative measure of health adjustment that is free of the potential for cultural bias since cut-scores are not defined. The ADSI-E provides a relative scale of measure that can be tailored for any population being studied. Future research may include studies that examine the relative health adjustment profiles of different populations.

In addition, this study incorporated an examination of the relationships between the four institutional (contextual) domains and the five individual (health outcome) domains were examined and reported through the use of correlations and Analysis of Variance. This study did not include analysis of the threshold for the domains which may provide a model for predicting school dropout.

Although no factor analysis was reported it is expected that such an analysis would yield evidence to support the clustering of domains into an institutional (contextual) factor and an individual (health outcomes) factor. Future analysis of this data set will include a factor analysis.



## **5.2 CONCLUSION AND APPLICATION OF FINDINGS**

The empirical literature over the past 25 years has consistently shown that psychological, behavioral, social, family, and school characteristics are important factors in distinguishing students who drop out of school from those who remain until graduation (Janosz, Le Blanc, Boulerice, & Tremblay, 1997). Recent research has consistently shown that academic, family, school, and social variables may all play a role in the decision to leave school (Hymel, Comfort, Schonert-Reichl, & McDougall, 1996). Researchers should look beyond traditional measures based on socioeconomic status, race and ethnicity. Social, human, and financial capital theories provide conceptual frameworks for examining contextual influences on an individual's adjustment. Future research needs to focus on more specific factors that can be changed through public policy. The ADSI-E is an efficient instrument that measures factors that we can change. The development and implementation of effective prevention and intervention programs is dependant upon support through school reform and public policy.

This study was designed to expand on previous research which sought to utilize a wide range of individual and institutional factors in establishing profiles of students who drop out of school. The application of quantifiable measures of health across nine domains provides a comprehensive and targeted examination of significant differences in adjustment between school dropouts and non-dropouts. Utilizing the ADSI-E individual domain measures also provided the opportunity to examine the relationship among these domains based on the clusters scores. The clustering of domains was based on previous literature that has explored the issue of school dropout from contextual perspectives, primarily related to socioeconomic status, race and ethnicity. This study aimed to extend previous investigations by establishing a quantifiable measure of the relationship of institutional (contextual) factors to individual (health outcomes) factors.

The implications of further understanding of the relationship between contextual influences and individual health outcomes may help provide critical insights into the stages and pathways to negative outcomes such as school dropout. Understanding these pathways could provide important information for determining the timing, target, and amount of intervention or treatment required to minimize or mitigate the risk of health problems and risk of school dropout.

### **5.3 IMPLICATIONS FOR FUTURE RESEARCH**

Additional research may be directed at determining the predictive validity of the ADSI-E for projecting odds of school dropout. Because the prevalence of school dropout varies among regions and countries it could be valuable to determine whether adolescents who drop out of school are distinguishable by their health adjustment scores in one or more domains of health measured by the ADSI-E. Future studies that incorporate use of the ADSI-E in other cultures, socioeconomic conditions, or countries could explore the potential for the ADSI-E to become an instrument for establishing a universal measure of current and changing health needs of adolescents as well as the potential for an efficient method of screening students for potential health adjustment risks associated with school disengagement and dropout.

The ADSI-E could be used as an efficient measure of quantifying changes in health adjustment for adolescents involved in intervention or treatment programs. Such studies could yield quantifiable measures on intervention and treatment program effectiveness as well as measures of improved health adjustment for program participants. In addition, the ADSI-E could be utilized for quantifying the current and changing health needs of adolescents for large scale regional public health initiatives aimed at understanding the health profile of youth for the purposes of strategic planning of targeted prevention and intervention programs and efficient deployment of resources to meet the quantified health needs across the region.

Finally, further study involving the Cox Proportional Hazards Model could provide important measures on the impact of delaying school dropout. How much do we reduce the risk of school dropout if we: keeping the student in school one more month, semester, year; ensure the student earns one more partial or full credit; increase the amount of student support and engagement at school; provide on-site access to social services through community partnerships?

The answers to these important questions have significant policy and program implications for determining the most cost effective means of reducing risk of school disengagement and dropout.

## APPENDIX A

### IRB APPROVAL



#### University of Pittsburgh *Institutional Review Board*

3500 Fifth Avenue  
Ground Level  
Pittsburgh, PA 15213  
(412) 383-1480  
(412) 383-1508 (fax)

#### MEMORANDUM

TO: Mr. Steve Weatherbee  
FROM: Sue R. Beers, Ph.D., Vice Chair  
DATE: March 1, 2006 *SRB*  
SUBJECT: IRB #0601100: Physical, Social, and Emotional Health Adjustment of School Dropouts vs. Non-school Dropouts

The above-referenced proposal has received expedited review and approval from the Institutional Review Board under 45 CFR 46.110 (7).

If applicable, please include the following information in the upper right-hand corner of all pages of the consent form:

Approval Date: March 1, 2006  
Renewal Date: February 28, 2007  
University of Pittsburgh  
Institutional Review Board  
IRB #0601100

Please note that it is the investigator's responsibility to report to the IRB any unanticipated problems involving risks to subjects or others [see 45 CFR 46.103(b)(5) and 21 CFR 56.108(b)]. The IRB Reference Manual (Chapter 3, Section 3.3) describes the reporting requirements for unanticipated problems which include, but are not limited to, adverse events. If you have any questions about this process, please contact the Adverse Events Coordinator at 412-383-1504.

The protocol and consent forms, along with a brief progress report must be resubmitted at least **one month prior** to the expiration date noted above for annual renewal as required by FWA00006790 (University of Pittsburgh), FWA00006735 (University of Pittsburgh Medical Center) and FWA00006600 (Children's Hospital of Pittsburgh).

**Please be advised that your research study may be audited periodically by the University of Pittsburgh Research Conduct and Compliance Office.**

SRB:kh

## APPENDIX B

### INFORMED CONSENT FORM

#### **MEMORANDUM**

**To:** *Students, Parents and Guardians*  
**From:** *Steve Weatherbee (School Principal, Researcher, and Doctoral Degree Candidate)& Jane Ashley (Supervising Principal, KPR Pathways for Success)*  
**Date:** *January 2006* **Re:** *Research Project*

Steve Weatherbee, school principal with the Kawartha Pine Ridge District School Board and Doctoral Degree candidate at the University of Pittsburgh, in collaboration with the KPR Pathway for Success Program, is collecting information about adolescent adjustment in multiple domains of social, emotional, and physical health to answer the following question:

***Is there a difference between the social, emotional, and physical health profiles of students who remain in mainstream school programs and students who leave mainstream school programs prior to graduation and/or drop out of school?***

Part of the data collection involves students. We are asking for your permission to have your son/daughter fill out an on-line survey. This survey takes approximately 20 minutes and will be completed in a supervised setting at their school. Participation is voluntary and should you choose to provide consent, you may withdraw it at any time.

The identity of individuals will be kept completely confidential. All data collected will be through secure ID codes with no indication of student names. There are no foreseeable risks, nor are there direct benefits since only the researcher will have access to the anonymous survey results. No individual evaluations or judgments will be made about any participating or non-participating student.

The results of this research may help us design further research investigations to determine how we may support the developmental health needs of students and reduce the chances of school drop out.

We hope you will support our research efforts to help students succeed by checking “yes”, signing this form, and return it as soon as possible to the school. If you have any questions about the project, contact Jane Ashley at 877-741-4577 or Steve Weatherbee at 412-648-7103.

It is possible that authorized representatives from the University of Pittsburgh Research Conduct and Compliance Office, the University of Pittsburgh IRB, may review your data for the purpose of monitoring the conduct of this study. If you have any questions about your rights as a research subject, please contact the Human Subjects Protection Advocate at the University of Pittsburgh IRB Office, 1-866-212-2668.

If the investigators learn that you or someone with whom you are involved is in serious danger of potential harm, they will need to inform the appropriate agencies, in accordance with the Child & Family Services Act of Ontario. In unusual cases, your research records may be released in response to an order from a court of law.

### **Research Project Data Collection**

### **Participation Consent Form**

**Student's** Name: \_\_\_\_\_ School: \_\_\_\_\_

I volunteer to participate in this research study: \_\_\_\_\_ Date: \_\_\_\_\_  
(Student's Signature)

Student's Teacher: \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_

\_\_\_ Yes, my son/daughter may complete the survey

**OR**

\_\_\_ No, my son/daughter may not complete the survey

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
(Parent or Student 18+ years)

*Please return this consent form as soon as possible to your child's teacher/school.*

*Thank you.*

## APPENDIX C

### ADSI-E (ADOLESCENT DEVELOPMENT SCREENING INVENTORY)

# ADSI-E

## Adolescent Development Screening Inventory-Education

### Questions

*Adapted from the DUSI-R (Drug Use Screening Inventory-Revised) ©  
(Tarter, 1990)*

**Flesch Reading Ease: 78.1%**

**Flesch-Kincaid Grade Level: 4.9**

**Completion Time: 20-25 Minutes**

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Dr. Ralph Tarter at [tarter@pitt.edu](mailto:tarter@pitt.edu) or Steve Weatherbee at [steve@ecenterresearch.com](mailto:steve@ecenterresearch.com)

## Physical Health

1. Have you had a physical exam or been under a doctor's care?  
☐ Yes  
☐ No
2. Have you had any accidents or injuries that still bother you?  
☐ Yes  
☐ No
3. Did you either sleep too much or too little?  
☐ Yes  
☐ No
4. Have you either lost or gained more than 10 pounds?  
☐ Yes  
☐ No
5. Did you have less energy than you think you should have?  
☐ Yes  
☐ No
6. Did you have trouble with your breathing or with coughing?  
☐ Yes  
☐ No
7. Did you have any concerns about sex or trouble with your sex organs?  
☐ Yes  
☐ No
8. Have you had unprotected sex with someone?  
☐ Yes  
☐ No
9. Have you had trouble with abdominal pain or nausea?  
☐ Yes  
☐ No
10. Have your eye whites ever turned yellow?  
☐ Yes  
☐ No
11. Do you ever feel that you want to swear?  
☐ Yes  
☐ No
12. Are you having problems in your life because of your Physical Health?

- ☐ Yes
- ☐ No

### **Leisure & Recreation**

13. Compared to most people, did you do fewer sports?
- ☐ Yes
  - ☐ No
14. Did you go out for fun on school nights without permission?
- ☐ Yes
  - ☐ No
15. On a typical day, do you watch more than two hours of TV?
- ☐ Yes
  - ☐ No
16. Were the parents absent at most of the parties you have gone to?
- ☐ Yes
  - ☐ No
17. Did you exercise less than most kids you know?
- ☐ Yes
  - ☐ No
18. Was your free time spent just hanging out with friends?
- ☐ Yes
  - ☐ No
19. Were you bored most of the time?
- ☐ Yes
  - ☐ No
20. Did you do most of your recreation or leisure activities alone?
- ☐ Yes
  - ☐ No
21. Did you use alcohol or drugs for recreational reasons?
- ☐ Yes
  - ☐ No
22. Compared to most kids, were you less involved in hobbies or outside interests?
- ☐ Yes
  - ☐ No
23. Were you dissatisfied with how you spend your free time?



- ☐ Yes  
☐ No
24. Did you get tired very quickly when you exerted yourself?  
☐ Yes  
☐ No
25. Have you ever bought anything that you did not need?  
☐ Yes  
☐ No
26. Are you having problems in your life because of your Leisure & Recreation?  
☐ Yes  
☐ No

### **School Adjustment**

27. Did you dislike school?  
☐ Yes  
☐ No
28. Did you have trouble concentrating in school or when studying?  
☐ Yes  
☐ No
29. Were your grades below average?  
☐ Yes  
☐ No
30. Did you skip class more than three times this past year?  
☐ Yes  
☐ No
31. Were you absent from school a lot?  
☐ Yes  
☐ No
32. Have you thought seriously about quitting school?  
☐ Yes  
☐ No
33. Did you often not do your school assignments?  
☐ Yes  
☐ No
34. Did you often feel sleepy in class?

- ☐ Yes  
☐ No
35. Were you often late for class?  
☐ Yes  
☐ No
36. Did you have different friends at school this year than you did last year?  
☐ Yes  
☐ No
37. Did you feel irritable and upset when in school?  
☐ Yes  
☐ No
38. Were you bored in school?  
☐ Yes  
☐ No
39. Were your grades in school worse than they used to be?  
☐ Yes  
☐ No
40. Did you feel in danger at school?  
☐ Yes  
☐ No
41. Have you failed a grade in school?  
☐ Yes  
☐ No
42. Did you feel unwelcome in school clubs or extracurricular activities?  
☐ Yes  
☐ No
43. Did your parents allow you to skip school?  
☐ Yes  
☐ No
44. Did you feel your parents don't care about your education?  
☐ Yes  
☐ No
45. Did you feel your teacher(s) don't care about you?  
☐ Yes  
☐ No

46. Did you feel unwelcome at your school?

☐ Yes

☐ No

47. Have you been suspended from school?

☐ Yes

☐ No

48. Do you ever put things off that you need to do?

☐ Yes

☐ No

49. Are you having problems in your life because of your adjustment to school?

☐ Yes

☐ No

#### **Family System**

50. Has a member of your family (mother, father, brother or sister) regularly used alcohol or drugs?

☐ Yes

☐ No

51. Has a member of your family used alcohol to the point of causing problems at home, work, or with friends?

☐ Yes

☐ No

52. Has a member of your family ever been arrested?

☐ Yes

☐ No

53. Did you have frequent arguments with your parents/guardians that involved yelling and screaming?

☐ Yes

☐ No

54. Did your family hardly do things together?

☐ Yes

☐ No

55. Were your parents/guardians unaware of your likes and dislikes?

☐ Yes

☐ No

56. Were there no clear rules about what you can and cannot do?

☐ Yes

☐ No

57. Were your parents/guardians unaware of what you really think or feel about things that are important to you?

☐ Yes

☐ No

58. Did your parents/guardians argue a lot with each other?

☐ Yes

☐ No

59. Were your parents/guardians often unaware of where you were and what you were doing?

☐ Yes

☐ No

60. Were your parents/guardians away from home most of the time?

☐ Yes

☐ No

61. Did you feel that either your parents/guardians don't care about you?

☐ Yes

☐ No

62. Were you unhappy about your living arrangements?

☐ Yes

☐ No

63. Did you feel in danger at home?

☐ Yes

☐ No

64. Do you ever get angry?

☐ Yes

☐ No

65. Are you having problems in your life because of your family system?

☐ Yes

☐ No

### **Behaviour Patterns**

66. Did you argue a lot?

☐ Yes

☐ No

67. Did you brag a lot?
- ☐ Yes
- ☐ No
68. Did you tease or do harmful things to animals?
- ☐ Yes
- ☐ No
69. Did you yell a lot?
- ☐ Yes
- ☐ No
70. Have you been stubborn?
- ☐ Yes
- ☐ No
71. Have you been suspicious of other people?
- ☐ Yes
- ☐ No
72. Did you swear or use dirty language a lot?
- ☐ Yes
- ☐ No
73. Did you tease others a lot?
- ☐ Yes
- ☐ No
74. Did you have a bad temper?
- ☐ Yes
- ☐ No
75. Have you been very shy?
- ☐ Yes
- ☐ No
76. Did you threaten to hurt people?
- ☐ Yes
- ☐ No
77. Did you talk louder than other kids?
- ☐ Yes
- ☐ No
78. Were you easily upset?

- ☐ Yes  
☐ No
79. Did you do things a lot without first thinking about the consequences?  
☐ Yes  
☐ No
80. Did you do risky or dangerous things a lot?  
☐ Yes  
☐ No
81. Did you take advantage of people?  
☐ Yes  
☐ No
82. Did you generally feel angry?  
☐ Yes  
☐ No
83. Did you spend most of your free time by yourself?  
☐ Yes  
☐ No
84. Have you been a loner?  
☐ Yes  
☐ No
85. Were you very sensitive to criticism?  
☐ Yes  
☐ No
86. Are your table manners better in a restaurant than at home?  
☐ Yes  
☐ No
87. Are you having problems in your life because of your behaviour?  
☐ Yes  
☐ No

### **Social Competence**

88. Did kids your age dislike you?  
☐ Yes  
☐ No
89. Were you usually unhappy with how well you did in activities with your friends?

- ☐ Yes  
☐ No
90. Was it difficult to make friends in a new group?  
☐ Yes  
☐ No
91. Did people take advantage of you?  
☐ Yes  
☐ No
92. Were you afraid to stand up for your rights?  
☐ Yes  
☐ No
93. Was it very hard for you to ask for help from others?  
☐ Yes  
☐ No
94. Did other kids easily influence you?  
☐ Yes  
☐ No
95. Did you prefer doing things with kids much older than you?  
☐ Yes  
☐ No
96. Did you worry about how your actions would affect others?  
☐ Yes  
☐ No
97. Did you have difficulty standing up for your opinions?  
☐ Yes  
☐ No
98. Did you have trouble saying "no" to people?  
☐ Yes  
☐ No
99. Did you feel uncomfortable if someone gave you a compliment?  
☐ Yes  
☐ No
100. Did people see you as not being a friendly person?  
☐ Yes  
☐ No

101. Did you avoid eye contact when talking to people?

☐ Yes

☐ No

102. Does your mood ever change?

☐ Yes

☐ No

103. Are you having problems in your life because of your social skills?

☐ Yes

☐ No

### **Peer Relationships**

104. Did any of your friends regularly use alcohol or drugs?

☐ Yes

☐ No

105. Did any of your friends sell or give drugs to other kids?

☐ Yes

☐ No

106. Did any of your friends cheat on school tests?

☐ Yes

☐ No

107. Did your parents or guardians dislike your friends?

☐ Yes

☐ No

108. Have any of your friends been in trouble with the law?

☐ Yes

☐ No

109. Were most of your friends older than you?

☐ Yes

☐ No

110. Did your friends skip school a lot?

☐ Yes

☐ No

111. Did any of your friends encourage you to skip class?

☐ Yes

☐ No



112. Did your friends get bored at parties when there was no alcohol or drugs?

☐ Yes

☐ No

113. Have your friends brought drugs or alcohol to parties?

☐ Yes

☐ No

114. Did you belong to a gang?

☐ Yes

☐ No

115. Was there no friend to confide in?

☐ Yes

☐ No

116. Compared to most kids, did you have few friends?

☐ Yes

☐ No

117. Have you ever been talked into doing something you didn't want to do?

☐ Yes

☐ No

118. Are you having problems in your life because of your relationships with peers?

☐ Yes

☐ No

#### **Emotional Health**

119. Have you intentionally damaged someone else's property?

☐ Yes

☐ No

120. Have you stolen things?

☐ Yes

☐ No

121. Have you gotten into more fights than most kids?

☐ Yes

☐ No

122. Have you been a fidgety person?

☐ Yes

☐ No

123. Have you been restless and unable to sit still?

- ☐ Yes  
☐ No
124. Did you have trouble concentrating?  
☐ Yes  
☐ No
125. Did you feel sad a lot?  
☐ Yes  
☐ No
126. Did you bite your fingernails?  
☐ Yes  
☐ No
127. Did you have trouble sleeping?  
☐ Yes  
☐ No
128. Have you been nervous?  
☐ Yes  
☐ No
129. Did you get easily frightened?  
☐ Yes  
☐ No
130. Did you worry a lot?  
☐ Yes  
☐ No
131. Did you have trouble getting your mind off things?  
☐ Yes  
☐ No
132. Did people stare at you?  
☐ Yes  
☐ No
133. Did you have special powers nobody else has?  
☐ Yes  
☐ No
134. Were you afraid to be around people?  
☐ Yes  
☐ No

135. Did you often feel like you want to cry?

☐ Yes

☐ No

136. Did you have so much energy that you did not know what to do with yourself?

☐ Yes

☐ No

137. Have you ever felt tempted to steal something?

☐ Yes

☐ No

138. Are you having problems in your life because of your emotional health?

☐ Yes

☐ No

#### **Substance Use**

139. Have you been under the influence of Alcohol or Drugs while at school?

☐ Yes

☐ No

140. Have you had a craving or very strong desire for alcohol or drugs?

☐ Yes

☐ No

141. Have you had to use more and more drugs or alcohol to get the effect you want?

☐ Yes

☐ No

142. Have you felt that you could not control your alcohol or drug use?

☐ Yes

☐ No

143. Have you felt that you were "hooked" on alcohol or drugs?

☐ Yes

☐ No

144. Have you missed out on activities because you spend too much money on drugs or alcohol?

☐ Yes

☐ No

145. Did you break rules, miss curfew, or break the law because you were high on alcohol or drugs?

☐ Yes

☐ No

146. Did you have a car accident after using alcohol or drugs?

☐ Yes

☐ No

147. Have you accidentally hurt yourself or someone else after using alcohol or drugs?

☐ Yes

☐ No

148. Have you had a serious argument or fight with a friend or a family member because of your drinking or drug use?

☐ Yes

☐ No

149. Have you had trouble getting along with any of your friends because of alcohol or drug use?

☐ Yes

☐ No

150. Have you experienced any withdrawal symptoms following use of alcohol or drugs (e.g., headaches, nausea, vomiting, shaking)?

☐ Yes

☐ No

151. Have you had a problem remembering what you had done while you were under the effects of drugs or alcohol?

☐ Yes

☐ No

152. Did you like to play drinking games when you went to parties?

☐ Yes

☐ No

153. Did you have trouble resisting using alcohol or drugs?

☐ Yes

☐ No

154. Have you ever told a lie?

☐ Yes

☐ No

155. Are you having problems in your life because of your substance use?

☐ Yes

☐ No

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